

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING -- SHEET METAL CONTRACTING



MAY 1944

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Increasing the Efficiency of Heating Plants	- - - - -	Page 55
Sheet Metal Contractors Nat'l Ass'n's First Convention	- - - - -	Page 75



AIR CONTROL

is proud to fly the Army-Navy "E" Flag and we hope that you will share this pride for you played a part in helping us to win the Army-Navy "E" Award.

With practically every machine and man working at top speed producing precision parts for the Air Forces, we know that there are times when our service and production have not maintained the high standards that have made Air Control Products a leader in the register industry.

And so to our dealers and jobbers, we say, thanks a thousand times for the patience and understanding you have given us for it was your cooperation that enabled us to speed precision parts to our Armed Forces.

We pledge our best efforts to continue our production record for our Armed Forces and to also supply our distributors with their essential requirements.

AIR CONTROL PRODUCTS, Inc.

COOPERSVILLE, MICHIGAN

REGISTERS, GRILLES, FLOOR FACES AND REGISTERS, DAMPER CONTROL SETS

TOOLS TO BUILD THE WORLD OF TOMORROW

.... *born from the need of today*



Born of a need to conserve critical aluminum, Thor "Armored-In-Plastic" portable electric drills today are smashing quotas on the jobs for which they were created!

Developed with features that provide light weight, easy handling, toughness and durability . . . these remarkable tools bring to vital industries unsurpassed production performance.

Thor "Armored-In-Plastic" portable electric tools already have a solid background of experience that will enable them to fashion—*more rapidly and more lastingly*—the emerging "World of Tomorrow."

AND...WHAT ABOUT "THE TOOLS OF TOMORROW?"

Thor has more new and revolutionary portable electric tools in its experimental laboratories today than at any time in its fifty years of pacing the field with new developments. For a brief glimpse of the trend, ask for your copy of Thor's remarkable new booklet, "Tools to Build the World of Tomorrow... Born from the Need of Today."

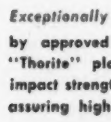
Thor

INDEPENDENT PNEUMATIC TOOL COMPANY

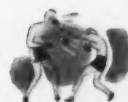
JOB-PROVEN FEATURES OF *Thor* "Armored-In-Plastic" ELECTRIC TOOLS



Extreme lightness of weight!—Application of "Thorite" plastic in gear case, field case and handle housings provides 14% lighter weight—without sacrifice of maximum power and other essential properties.



Exceptionally high impact strength!—Tests by approved laboratory methods show "Thorite" plastic tool housings to have impact strength greater than aluminum . . . assuring high resistance to shock blows.



Remarkably low thermal conductivity!—"Thorite" is a non-conductive plastic that prevents heat developed by the motor from being transmitted to the hand of the operator . . . providing constant cool handling.



Increased safety factors!—"Thorite" plastic housings, so efficient as non-conductors, offer extra safety against electrical shock.



Toughness and durability!—Strength characteristics of "Thorite" plastic, as shown under approved testing methods, compare favorably with aluminum.

(Tensile strength — 8,000 pounds per square inch; Flexural strength — 13,000 pounds per square inch; Compressive strength — 23,000 pounds per square inch.)

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

FURNACES
SHEET METALS

AND

Warm-Air
Heating

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 113, No. 5

May, 1944

Founded 1880

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In This Issue

THIS month's cover photo (by H. Armstrong Roberts) was selected to give a theme for a survey on the situation in furnaces, blowers, motors, registers and grilles, warm air pipe and fittings and controls which we expected to publish in this issue—but, as so frequently happens, our manuscripts were sent to Washington agencies for checking and approval and the release was not forthcoming when it was time to go to press. So if the studies are released, this survey will appear in June.

...

We believe every man in business will like the first-hand, intimate view of what Washington is doing to aid "small business" in Arnold Kruckman's Washington Letter (page 44). Before you make up your mind that small business has been left to shift for itself, or before you decide everybody is talking about small business—read Mr. Kruckman's report on what is going on in Washington and by whom. It looks to us as though small business problems are in a fair way to be talked to death. But maybe something will come out of the huddle.

...

We have given more space than usual to the convention report of the Sheet Metal Contractors National Ass'n first convention (page 75), but we do so because we believe every reader will want to know what went on, what was decided, what the plans are for 1944, and will it pay to join. The answers to all these are presented in our report—you can decide what you will do about it.

...

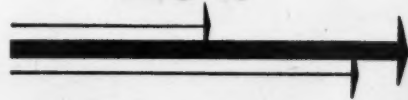
There's a very timely article on business management (Arthur Roberts, page 46) which points out the common fallacy of believing that profit on sales is the only base for judging if your profit is satisfactory. How's your profit on the capital you have invested?

Member of Audit Bureau of Circulations—Member Associated Business Papers, Inc.

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago (2), Ill., U. S. A. Copyright 1944 by Keeney Publishing Company. Publisher—Frank P. Keeney; Manager—Chas. E. Price. Advertising staff: Wallace J. Osborn, New York City, Telephone—Murray Hill 9-8293; J. D. Thomas, Chicago, Telephone—State 6916; Robert A. Jack, Cleveland, Telephone—Yellowstone 1540; J. H. Tinkham, Los Angeles, Telephone—Richmond 6191. (On leave of absence—R. Payne Wettstein, U.S.N.R.)

Yearly Subscription Price—U. S. and possessions, Canada, Mexico, South America, Central America, \$2.00; Foreign, \$4.00. Single copies, U. S. and possessions, \$.25. Back numbers, \$.50. January, 1944, Directory issue, \$1.00 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of March 3, 1879.

SELL HEATING *Economy* and SERVICE NOW



Winter-Worn Heating Systems NEED Reconditioning for the Coming Winter

There will be no "let-up" in the demand for fuel saving during the coming winter. And there will be even LESS fuel than was available last year.

This presents an attractive opportunity for Heating Engineers and Contractors to sell early reconditioning and repair of winter worn heating plants.

Next to your own skill and knowledge of heating problems, the best aid in this important service to your customers is the quality Asbestos Products offered by Sall Mountain Company.

Sal-Mo Asbestos Products are available for all types of fireproofing, and insulating needs. They include Asbestos and Aircell Papers, Millboards, #77 Duct-board, Supply Duct, Pipe Coverings, Furnace and Boiler Cements, Tank Jackets and many others.

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Where Locomotives BELCH DESTRUCTION TO METALS

EVERDUR^{*} STANDS UP



YEARS OF SERVICE in venting corrosive locomotive fumes from this railway loading dock have failed to impair the Everdur ducts in this San Francisco warehouse of the Atchison, Topeka and Santa Fe Railroad. Installation was made by the James A. Nelson Company, Inc.

Corrosion resistance, durability and workability combine to recommend Everdur for ducts, tanks and vessels that must withstand extreme conditions such as those encountered in chemical plants. Our Technical Department is available for assistance in meeting special problems. This service, of course, involves no obligation.

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^{*}Reg. U. S. Pat. Off.

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Subsidiary of Anaconda Copper Mining Company

General Offices: Waterbury 88, Connecticut

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Everdur Copper-Silicon Alloys provide the corrosion-resistance of Copper . . . plus these useful characteristics:

High Tensile Strength—Everdur approaches the strength of mild steel.

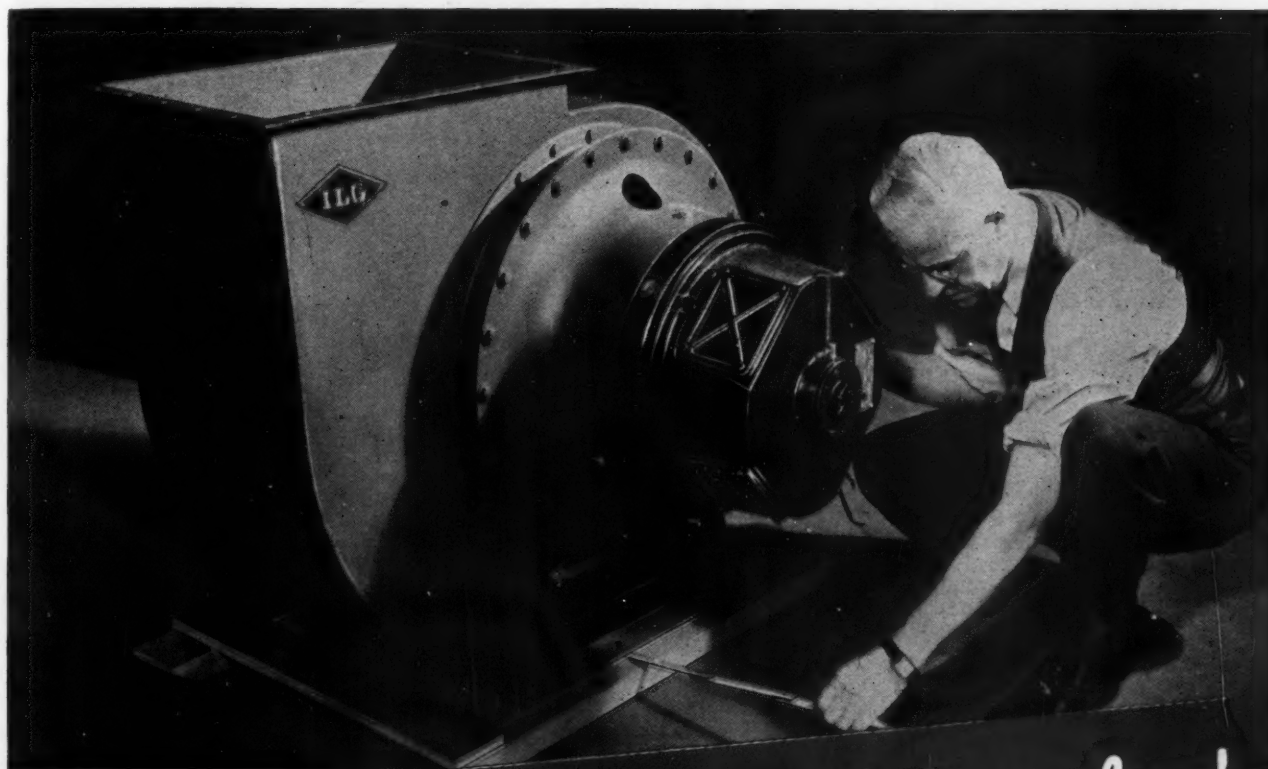
Ready Workability—Everdur can be drawn, rolled, spun, stamped, forged and pressed . . . hot or cold.

Weldability—Everdur can be readily welded.

Everdur is made in practically all commercial shapes.



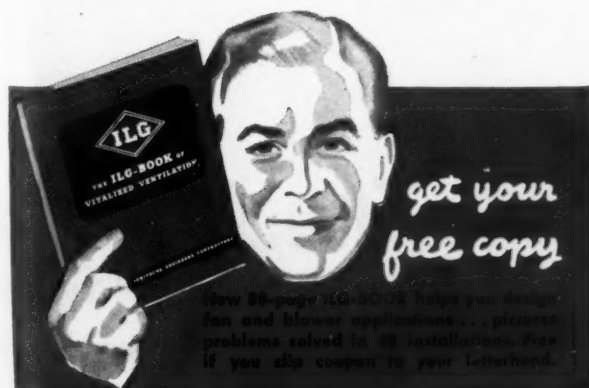
Anaconda Copper & Copper Alloys



put this blower in your post-war plans!

Designed specifically for installation aboard ship, where every inch counts, these new "CC" type all-steel welded ILG Blowers will be available just as soon as Uncle Sam's wartime requirements are handled. Even in this illustration picturing the unit with a marine motor you can see the many advantages of ILG's compact construction... direct-connected motor partially recessed into blower side (no belts, no pulleys, no separate motor mounting)... wheel mounted directly on motor shaft for single operating unit with fewer wearing parts..."factory-set" alignment to lengthen bearing life and prevent vibration... a self-

contained blower which is tested and shipped completely assembled, ready to roll or suspend into position. Saves you time and money all along the line—installation, operation and maintenance! For your post-war plans, get details on this new Blower from nearby Branch Office (consult classified directory) or write us.



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"or equal"

"Or Equal" to Go

Architects and building materials makers collaborate in eliminating a troublesome clause from specifications.

Joint meetings now being arranged in some 20 cities by local chapters of the American Institute of Architects and the Producers Council, national organization of manufacturers of building materials and equipment, will promote immediate practical application of the council's plan to eliminate the trouble-breeding "or equal" clause from construction specifications.

● **Quality at Minimum Cost**—Bane of the architect, engineer, general contractor, and subcontractor, the "or equal" clause had its genesis in the laudable attempt to obtain specified quality for the owner at minimum cost. A named product in the contract proposal was followed by the "or equal" phrase to permit bidders to submit the lowest obtainable price, based either on the named product or on another of equivalent quality.

Because what constituted an equivalent product frequently was subject to debate, a high-quality product often had to compete in price with one of inferior quality. When the "equal" product was in the borderline zone of debatable quality, the opinions of the architect and contractor clashed. One of them had to concede to the other, with resulting money loss to the contractor or with possible quality sacrifice on the part of the owner.

● **Only One Specified** — Under the new plan, the architect or engineer writing the specifications names the product on which the base bid is to be offered. General contractors, and through them the subcontractors, are free to submit proposals for alternative products, providing additions or deductions to be applied to the base bid if such alternative products are adopted.

With base bids and alternate estimates in hand, the owner and his architect or engineer decide which products to accept for incorporation in the structure, and these products are specified in the contract finally signed.

● **Based on Experience** — The plan, approved by the council in 1942, was adopted in principle by the architects in their annual convention last May. To put the new principle to work, local A.I.A. chapters and Producers Council clubs soon will hold their joint meetings, inviting the cooperation of organized engineering, contractor, and sub-contractor groups.

Certain architects and engineers for some time have eliminated the "or equal" clause from contracts, and the plan now advocated is based on the procedure which has proved most satisfactory to them.

From Business Week, January 15, 1944

The American Institute of Architects, as stated in the clipping from a recent issue of Business Week shown at left, adopted a plan in 1943 to eliminate the "or equal" clause from their specifications and to substitute a "base bid and alternate bid" type of specification.

Reputable contractors concur that dropping "or equal" specifications will eliminate a most controversial clause and afford the conscientious bidder greater protection.

The Herman Nelson Corporation has maintained for over thirty years that base bid and alternate bid specifications are the only ones which allow architects and their clients to obtain at the lowest cost equipment best suited to their needs. The following is quoted from a Herman Nelson Catalog published in 1930:

"Value of equipment is not determined by cubage, weight or appearance, but by service. The standard for quality can only be fixed by naming a specific article. The more or less common practice of attaching the words 'or equal' in an effort to permit competition defeats the real purpose of the specifications unless they clearly state that the determination of equality shall rest solely with the Committee, its Engineer or its Architect. To be fair, the rules governing competition must be clear and definite and not subject to individual interpretation. The 'or equal' clause sometimes



The Herman Nelson

Manufacturers of Quality Heating Ventilating

General Offices: Moline,

Factories at Moline and Chicago

ARCHITECTS DECIDES

should go

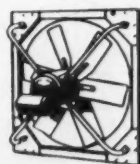


lowers the cost of building but it *always* lowers its value.

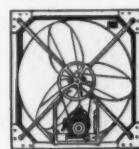
"Architects and Building Committees who have been 'through the mill' will probably not challenge any of these statements but they may counter with this proposition: 'Yes, but if we specify exactly what we want, how are we to be protected against unfair competition, monopoly, or exorbitant prices by the manufacturer of the article specified?' This question is a reasonable one. Several solutions have been suggested but it has been found that the most practical one is the use of *alternate bids*, wherein the specifications provide that if the bidding contractors desire to submit proposals on substitute systems or equipment, they may do so, but shall file their bids based upon the plans and specifications and shall state in same the deduction or addition to be made in case such substitutions are accepted. The specifications should further provide that no substitution will be allowed after contracts are let. This method provides for fair competition, insures reasonable costs and places the determination of both quality and price in your hands."

The Herman Nelson Corporation congratulates the American Institute of Architects, the Producers' Council and the many contractors for the work which they are doing to promote the plan of base bid and alternate bid specifications.

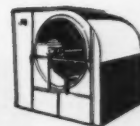
Herman Nelson Offers a Complete Line of Products for Heating and Ventilating Commercial, Industrial and Public Buildings



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Herman Nelson hiJet
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Propeller-Fan Type Heaters



Herman Nelson hiJet
Vertical Shaft
Propeller-Fan Type Heaters



Herman Nelson
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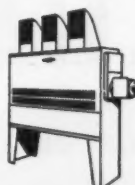
Herman Nelson
Autovent Belt Drive
Unit Blowers



Herman Nelson
Autovent Direct Drive
Blowers



Herman Nelson hiJet
De Luxe Heaters



Herman Nelson hiJet
Blower-Fan Type
Heaters



Herman Nelson
Unit Ventilators

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Heating, Ventilating, and Air Conditioning Products

Head Office: Moline, Illinois

Branches at Moline and Chicago, Illinois

CHECK NOW ON HEATING REPAIRS...

Avoid Late Summer Rush

You'll profit...your customers will benefit...and the war effort will be helped...*if you begin right now to promote heating plant repairs and renovation.*

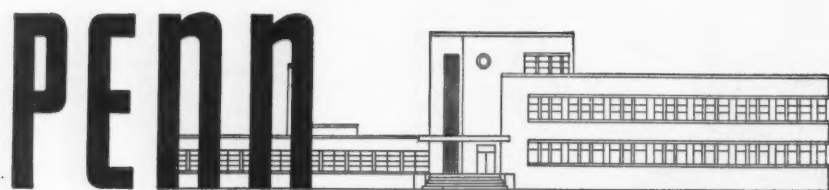
Fuel conservation is more necessary than ever, with the war at the critical stage in its demand on both materials and manpower. Worn out or wasteful heating equipment must be replaced or reconditioned for maximum efficiency.

Avoid the late summer rush, start now to schedule work through the summer months

...it will help *relieve the pressure on your facilities* next fall when all of your customers will clamor for immediate service.

Penn is prepared to co-operate. We can make prompt shipment of most of our standard model heating controls. *Send us your orders now* and we will do our utmost to give you our usual prompt "peace-time" service.

If you don't have the Penn condensed heating catalog and price information, write at once. *Penn Electric Switch Co., Goshen, Ind.*
In Canada: Powerlite Devices, Ltd., Toronto, Ontario.



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FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS, AND AIR COMPRESSORS

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One industry is round to the burning

YORK

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YORK HEAT offers you Worth-while Franchise

One of the most valuable franchises in the heating industry may be available in your area. York Heat is rounding out its distributional set-up, preparatory to the introduction of the most complete line of oil-burning equipment in oil-burner history.

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York Heat nationally known and universally respected.

YORK HEAT is ready with a New Financing Plan

A streamlined, non-recourse, sales-closing financing plan that is simplicity itself. It carries York Heat oil-burning equipment from factory to consumer, with practically no need for capital investment by distributor or dealer.

YORK HEAT is ready with National Advertising

Ready to step-up the tempo of consistent national advertising, in key consumer publications, which is pre-heating the market from coast to coast. Ready, also, with a cooperative advertising plan to fit the needs of distributor and dealer alike—flexible enough to meet every requirement.



YORK HEAT

Division of YORK-SHIPLEY, Inc., York, Pa.



Member Oil Heat Institute

**YORK HEAT, Division of
YORK-SHIPLEY, Inc., YORK, PA.**

Gentlemen:

I am interested in learning more about the advantages of a York Heat franchise.

Name.....

Address.....

This TOOL for a LIFE RAFT is part of our POSTWAR PLANNING



Here you are miles from nowhere in any direction. Just a sitting duck with no place to go but the way the sea decides to take you. Above, a blazing, searing sky; below you, water that only helps the sun to boil you beautifully, lobster fashion. That, and many times worse, is what it's like to be *down at sea*.

Several years ago . . . long before Pearl Harbor . . . Crescent was asked by the Army Air Forces to supply a sufficiently versatile tool with which to equip their rubber life rafts. After many tests, this tool turned out to be a special, light-weight Crescent Slip-joint plier with a Cadmium finish designed to withstand the ravages of anything from humid jungle to Arctic cold or salt spray corrosion. In those early days, a plier was the only tool in the kit. Since then, other tools have been added. Today, this precious little Crescent Plier is used on the life rafts of our armed forces.

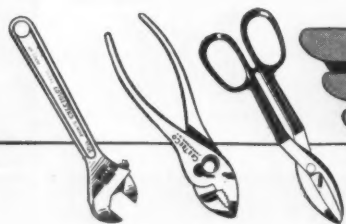


This is the Crescent "Tool Kit" for Life Rafts. Five inches long; extremely light weight; the point of one handle serves as a screw driver; has wire-cutting jaws and is cadmium plated to protect it against salt spray.



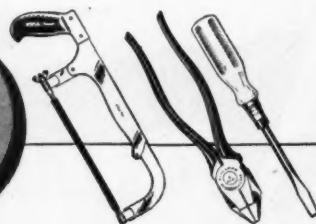
Point is, that here and in many other instances where we have been producing the finest possible *tools of war*, we have unconsciously been doing some post-war planning in the bargain. Because of this little slip-joint plier for life rafts, our future tools are going to be better . . . more efficient and longer lasting.

When the skies of battle clear, and we are released of our duty to the nation, we will be offering the finest tools to ever carry the Crescent name. To most of us, *War Bonds* are the only means available to speed that day. Crescent Tool Company, Jamestown, N. Y.



CRESCENT TOOLS

Give Wings to Work



America's
man Oil H
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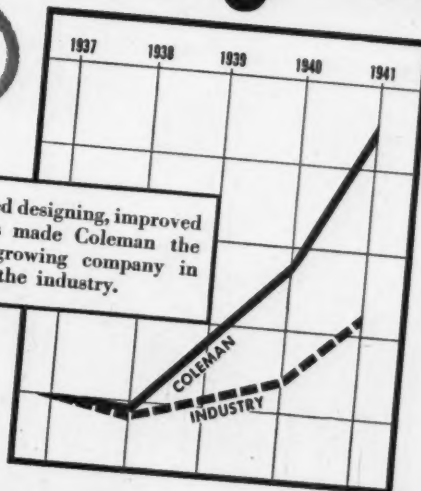
How Coleman's 7-Way Leadership Can Help You Be The Leading Heating Dealer



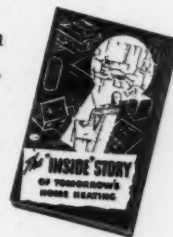
THESE 7 POINTS SHOW WHY COLEMAN IS TOPS IN HEATING

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- 2 **UNEQUALED PRODUCT PERFORMANCE** backed by an engineering development program that gives you the newest, most advanced types of heating equipment to sell.
- 3 **NATIONAL ADVERTISING AND SALES PROMOTION** to "pre-sell" your customers and maintain Coleman leadership.
- 4 **SALES AND SERVICE ENGINEERS.** A nation-wide staff of experts to make your merchandising more effective.
- 5 **THE BEST PROFIT LINE.** Every Coleman unit is a "hot" item—no "duds" to pull down profits.
- 6 **FINEST DISTRIBUTOR SUPPORT** to aid sales, plus direct help from Coleman.
- 7 **OVER 40 YEARS OF LEADERSHIP** in engineering and product development backed by ample financial strength.

Improved designing, improved products made Coleman the fastest growing company in the industry.



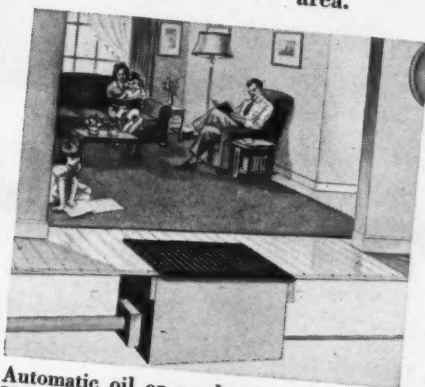
FREE BOOKLET! Big Coleman ads in national magazines are reaching millions of people, and thousands of your heating prospects are writing for Coleman's new booklet—"The Inside Story of Tomorrow's Home Heating." Write for your copy today.



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Automatic oil or gas heating at its best! New Coleman floor furnaces with advanced heating principles to bring new comfort to millions of homes.



A great heating advance! The powerful, compact, new Coleman central heating plant that occupies a space only two feet square. For either oil or gas.

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THE "HOT" NAME IN HOME HEATING

Coleman

THE COLEMAN LAMP AND STOVE COMPANY • WICHITA • CHICAGO • PHILADELPHIA • LOS ANGELES
AMERICAN ARTISAN, May, 1944



Food box for hungry guns

On U. S. training grounds, in tropical foxholes and under the brooding fogs of the Aleutians, American soldiers are scooping hundreds of thousands of bullets out of ammunition boxes like the one shown above.

These sturdy field-gray containers are just one item in an almost endless list of items made for the Army from sheet steel. Bethlehem is producing large tonnages of sheet steel at top speed for ammunition

boxes, mess kits, field kitchens; for bomb fins and shell windshields; for jeeps, trucks, combat vehicles, and many another piece of military equipment.



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For Bigger Sales Volume Sell VIKING Indoor Climate Control

Your best prospects postwar will be the home owners who insist on automatic indoor climate control. They'll never settle for just "a good furnace." Properly regulated temperature both summer and winter, and clean desirably humidified air throughout the house will be the *comfort* demanded in the Home of Tomorrow.

You can get a major share of this big volume business if you have the Viking complete line of heating, cooling and year round air conditioning equipment. Whether the desired fuel is oil, gas or coal Viking can supply you with efficiently engineered units to fully satisfy the most exacting demands.

Reliable Performance and Long Life

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The Viking Wholesaler to Contractor-Dealer distribution plan provides the easily accessible inventories, service facilities and financing accommodations you will need to handle an expanding sales volume. Use the Viking Wholesaler facilities to avoid delays and lower your costs.

New Full Line Catalog Now Available

The Viking full line offers many new profit opportunities for you. Write for our new catalog and protected territory selling plan.

Wholesale Distributors—If your territory is not yet served by a Viking Wholesale Distributor, we'll be glad to discuss the possibilities with you. Our factories are already in production and we can ship as much equipment as present regulations will allow. Write today for our plan.

(Watch future Viking advertising for other modern equipment soon to be announced.)



THE

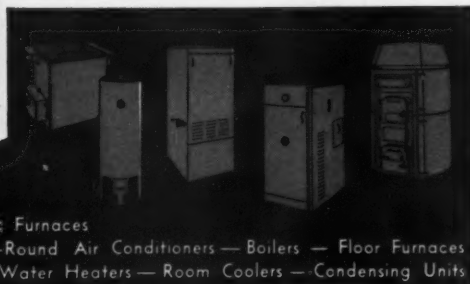
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1601 U.B. BLDG. DAYTON 2, OHIO

FOR ALL FUELS: Furnaces

Winter and Year-Round Air Conditioners — Boilers — Floor Furnaces
Space Heaters — Water Heaters — Room Coolers — Condensing Units



Viking Year Round Heating, Cooling and Air Conditioning equipment is available in a wide range of capacities to provide automatic indoor climate control in homes both small and large. Viking standard automatic controls free householders of every care.





SUNBEAM

WHEN the urgent demands of war production have been met, and manpower, materials and supplies become sufficiently available, the manufacture of **SUNBEAM** Warm Air Equipment will be vigorously resumed. We look forward to that day and the opportunity of renewing our pleasant trade relations of the past.

Meanwhile, our **SUNBEAM** Plant will continue to devote all its facilities to the production of magnesium castings and parts for planes vitally needed to win the war.

Our plans today remain the same and do not call for any change in our pre-war method of distributing our products.

AMERICAN
RADIATOR & Sanitary
New York CORPORATION Pittsburgh



Name Your Toughest Finishing Job . . . ONE OF THESE SKILSAW TOOLS WILL DO IT FASTER, BETTER, EASIER!

If your problem is grinding down heavy weld beads, smoothing off a thick braze, or removing heavy burrs . . . a SKILSAW Portable Grinder will speed the work. If it's cleaning off spot welds, removing rust or scale, or polishing a curved surface . . . one of these SKILSAW Disc Sanders will do the job better. Or if it's final-finishing on flat surfaces of any material . . . you can depend on a SKILSAW Belt Sander to do it easier.

These SKILSAW Disc Sanders, Belt Sanders and Portable Grinders, like all SKILSAW TOOLS, are *built to stand the gaff*. They're powered for extra fast work . . . they're streamlined, compact, lighter for easier handling . . . and they're *better-built throughout* for trouble-free performance longer . . . at a lower cost.

Judge for yourself . . . ask your distributor for a demonstration of SKILSAW TOOLS on your own work today!

Planning for After-the-War?

Let Skil saw Field Engineers help you now to plan "tooling-up" for peacetime production with Skil saw's new post-war tools.



SKILSAW, INC.

5033-43 Elston Ave., Chicago 30, Ill.

Sales and Service Branches in All Principal Cities

• Speed all finishing on flat, concave or convex surfaces of all materials. Used with wire brushes, grinding wheels, sanding discs or felt rubbing pads.

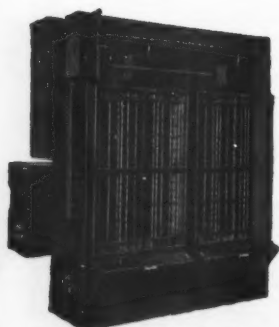
• Do all sanding and finishing on flat surfaces of metal or wood. Light in weight, powerful, perfectly balanced for smoother, faster, easier surfacing on all operations.

• Best tool for grinding down heavy welds, studs, rivets and bolts. Ball bearing construction absorbs spindle thrust, assures smoother, vibrationless work.

SKILSAW PORTABLE ELECTRIC **TOOLS**

MAKE AMERICA'S HANDS MORE PRODUCTIVE

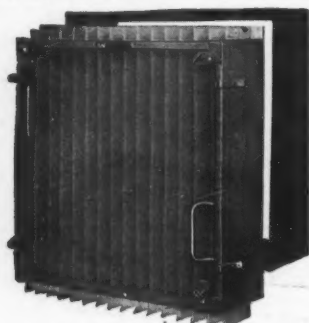
NOW is the time to consider your post-peace atmospheric and process dust control problems!



ELECTRO-MATIC air filter combines electrical precipitation with automatic air filtration to obtain highest efficiency in the removal of atmospheric dust, smoke, vapors and welding fumes. Bulletin 250-C



AMERICAN AUTOMATIC self-cleaning filter is ideal for most large ventilating and air conditioning installations. Provides multi-stage air cleaning by means of filter media of graduated density. Bulletin 241

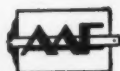


AIRMAT TYPE PL dry filter is designed for ventilating and air conditioning service where dust concentration is not abnormal. Its advantages of high cleaning efficiency, low initial resistance, and large dust holding capacity make it applicable to more types of air cleaning service than any other filter. Bulletin 230 B

AN ERA OF COMPETITION such as America has never before experienced will break like a bomb shell when peace is made, and manufacturers return to producing civilian consumer goods. To be prepared to operate profitably in this new economy calls for careful planning TODAY—careful consideration of all the factors that might result in lowering manufacturing costs.

Industry has long since recognized the need for adequate dust control and has learned thru its wartime experience that in the post-peace era, dust control will be a factor of major importance.

AAF has the facilities TODAY to help you work out your tomorrow's dust control system. There is no obligation involved in asking for help. Let us send you "AAF in Industry"—a booklet which describes the full line of AAF equipment, preliminary to discussing your needs with one of our engineers. Please address AAF at 355 Central Ave., Louisville, Ky.



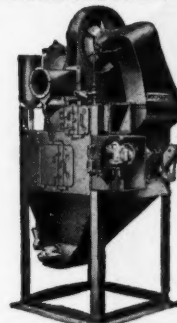
AMERICAN AIR FILTER CO., INC.
INCORPORATED

LOUISVILLE, KENTUCKY

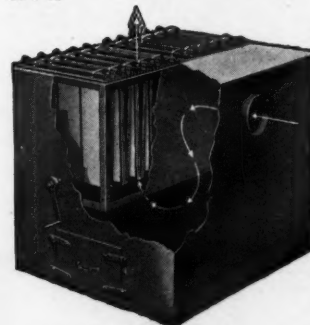
IN CANADA: DARLING BROS. LTD., MONTREAL, P. Q.



ROTO-CLONE TYPE "D"—for collecting process dust in dry form combines fan and dust collector in a single unit—eliminating expensive piping and high installation cost. Available in all sizes and capacities, also as self-contained unit including dust hopper and a filter to clean the exhaust air for recirculation into the workroom. Bulletin 272



ROTO-CLONE TYPE "W" collects process dust in wet form delivering it as sludge. Combines scrubbing effect of water sprays with dynamic precipitation. Collects finely divided materials more efficiently, especially in the chemical, ceramic and foundry industries. Bulletin 274 A



AIRMAT DUST ARRESTER is available as a Dust Box with fan unit for the collection of fibrous and flaky process dusts. Requires only piping and electrical connections to be ready to operate. Uses standard Airmat filtering material with proven performance and economy advantages. Bulletin 280

Over 12,000,000 lbs. of **Weirzin**



for the metal ends of fiber shell cases

Requirements for these shell case ends are complex and tough . . . Severe fabrication; Bonderizing for paint adherence, Lacquering for reflectivity control —and then WAR SERVICE in steaming jungles, in arctic snows, buried on beaches, banged into action . . . Weirzin fills the specification . . . Over 6 thousand tons of this new electrolytic zinc coated steel have already been used for these metal ends.

Weirzin is available in coils or cut lengths, in sheets or strips, from $\frac{3}{8}$ " to $32\frac{1}{2}$ " widths. It is produced in .008 to .037 gauges coated 1/10 or 2/10 ounces per sq. ft. on both sides. Weirzin is a durable, ductile product with a good malleable coating for deep drawing . . . Perhaps it may solve an important forming or coating problem for you too. Write for a sample and complete details.

WEIRTON



STEEL CO.

WEIRTON, WEST VIRGINIA Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.



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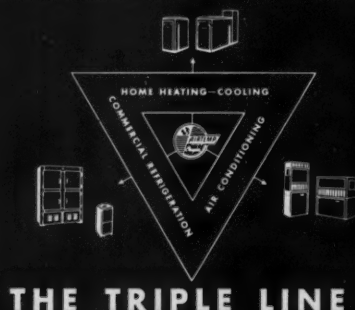
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DISPLAY SELLS GOODS... IN ANY LINE

People buy with their eyes! The better the product—the better the display—the quicker a sale is clinched. Chrysler Airtemp believes proper display of heating, air conditioning and commercial refrigeration equipment will step up sales volume in the postwar period... that it will cut the cost of selling and increase the dealer's profits.



CHRYSLER AIRTEMP BRINGS TO THE HEATING DEALER A DISPLAY LINE—THE TRIPLE LINE

Prospects will feel rewarded for visiting a Chrysler Airtemp dealer because the products are to be so handsomely and functionally designed... built around advanced Chrysler Airtemp engineering... priced to meet the needs of even modest budgets.

The Triple Line opens up a new conception of comfort the year 'round in the home and efficient air conditioning and refrigeration in commercial establishments.

In the postwar period, new building and modernization will create a market for heating, air conditioning and commercial refrigeration that provides the heating dealer, with the Chrysler Airtemp Triple Line, opportunity for 12 months profitable operation each year.

Direct dealer contracts will be available for just the Chrysler Airtemp heating line—or for heating in combination with air conditioning or commercial refrigeration—or for all three lines.

The attractive product display opportunities will bring interested prospective buyers to your place of business.

Next Month's Advertisement Will Be Devoted to the Subject of Outside Selling.

B U Y W A R B O N D S

CHRYSLER  **AIRTEMP**
AIRTEMP DIVISION OF CHRYSLER CORPORATION • DAYTON, OHIO

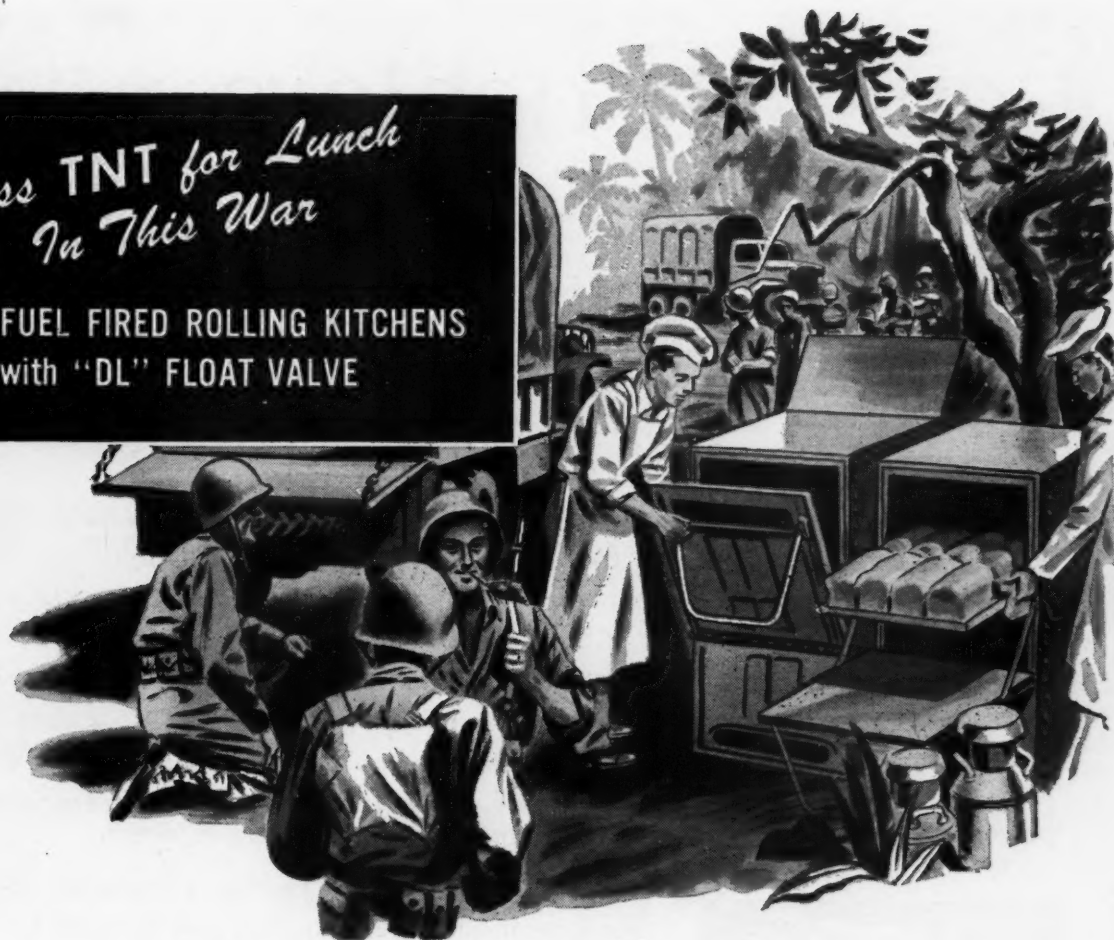
Tune in Major Bowes every Thursday, CBS, 9 p. m., E. W. T.

The Indoor Climate Institute is making the
American Public Conscious of the Need for
Greater Indoor Comfort and Health.



*Less TNT for Lunch
In This War*

LIQUID FUEL FIRED ROLLING KITCHENS
with "DL" FLOAT VALVE



In World War I, the smoke of coal or wood fired rolling kitchens made a fine target for artillery and bombers. Nothing could be done to conceal it, and as a result, bombardment and bombing at mealtime were a regular diet.

Our doughboys now eat meals prepared in field ranges fired by gasoline or oil. No telltale smoke reveals the location of mealtime concentrations of men. Kitchens can be operated after nightfall if needed, because they do not glow. "DL" Float Valves control many of these field range burners.

All over the world, wherever our fighting men are stationed, will be found cooking ranges, furnaces, tent heaters and water heaters equipped with "DL" Float Valves.

Because they are very reliable and easy to clean and service, "DL" Float Valves are in demand by manufacturers of war equipment.

When oil burning stoves and furnaces again appear on the market, make sure the line you select is equipped with "DL" products.



An Exclusive "DL" Float Valve Feature . . . AUTOMATIC TEMPERATURE COMPENSATION

Fuel oil viscosity increases as its temperature drops. An ordinary needle or float valve either does not feed enough when oil is cool or cold, or feeds too much when it is warm. • The "DL" Float Valve has a simple temperature compensation which opens the valve more when the oil is cold—reduces the orifice when the oil is warm. • This is an exclusive "DL" feature.

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG



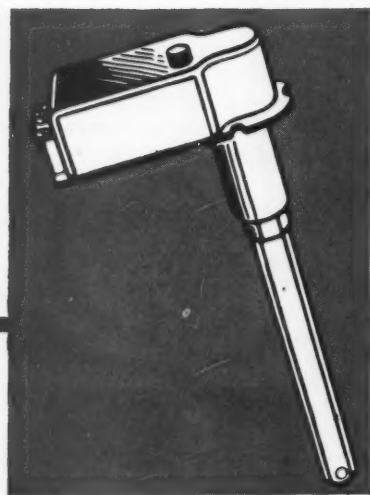
"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators

For G-E dealers— this head start in the race for postwar heating business

GENERAL ELECTRIC's name and reputation . . . plus the guiding spirit of research that has always set the G-E pace for progress . . . should put General Electric dealers in a decidedly favorable position for winning new and greater rewards in the postwar heating market.

The high standards of performance set by General Electric Automatic Heating Equipment in the past have been made possible by *untiring research*. And G-E's promise for the future is: further improvement of equipment already well known to home-owners for consistently efficient operation and remarkable fuel economy.

Knowledge gained by *wartime* experience will be put to good use in the development of new General Electric Heating Equipment for postwar. Many aggressive dealers are making plans *now* to take advantage of the sales opportunities that will be waiting for G-E equipment after Victory. *General Electric Company, Heating Division, Section 4535, Bloomfield, New Jersey.*



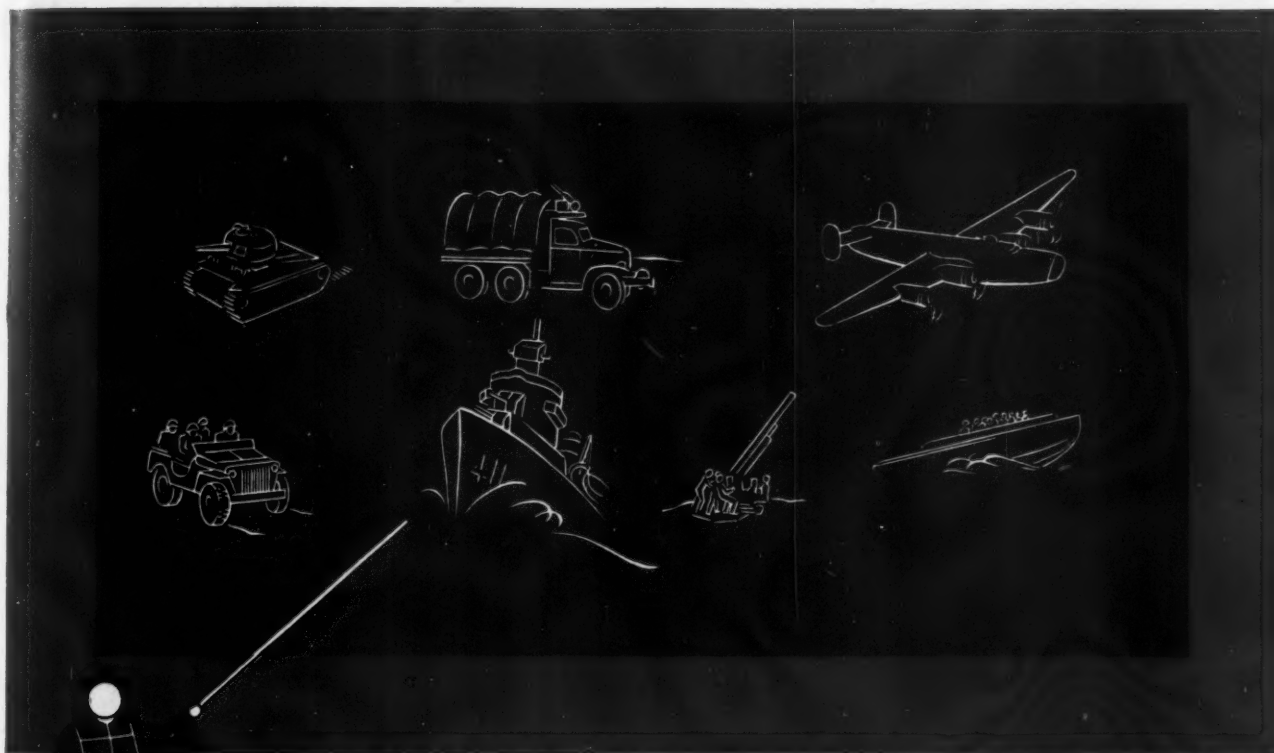
THE G-E FLAME DETECTOR — an amazingly swift-acting safety control incorporated in G-E pre-war heating units. In event of flame failure from any cause, it goes into action in *less than five seconds* . . . automatically shuts off oil-burning mechanism. The General Electric heating units of the future will have many equally important buying features to excite the desires of prospective purchasers . . . and equally helpful, as *selling points*, to G-E dealers.

Automatic Heating by
GENERAL  ELECTRIC



"CONTROLLED WEATHER"

Hear the General Electric Radio Programs: The "G-E ALL-GIRL ORCHESTRA," Sundays 10 P. M., EWT, NBC . . . "THE WORLD TODAY" News, Every Weekday, 6:45 P. M., EWT, CBS



THE VITAL WAR MATERIALS IN TONCAN IRON ARE THE REASONS WHY . . .

you can't get this rust-resisting metal today!

For more than 35 years, Toncan Iron has been a well-known name for quality sheet metal of exceptional rust-resistance. But due to war restrictions, we had to suspend production.

The reason is that Toncan Iron is an *alloyed* iron containing two vital war materials—Copper and Molybdenum—which are needed to give essential qualities to fighting equipment.

We could produce Toncan Iron without copper and molybdenum, but we refused. It wouldn't afford its famous rust-resistance. It wouldn't be fair to our customers to offer an inferior Toncan Iron—even for the duration.

This war restriction, however, definitely proves that Toncan Iron is not merely an iron—nor a copper-bearing steel—but much more than either.

It is made from commercially-pure iron which is alloyed with *copper*—

twice as much as found in copper-bearing steel—and *molybdenum* in correct proportion to improve the grain structure and make the copper more effective. Toncan has the highest rust-resistance—inside and out—of all ferrous materials in its price class. It is uniformly ductile—speeds fabrication by any method.

But Toncan Iron will be back after the war, better than ever. From our war experience are coming new developments in ferrous materials that will mean better Toncan Iron sheets

to help you rebuild a profitable business.

So, keep an ear to the ground for the return of Toncan Iron. In the meantime, read the booklet "How Toncan Iron makes Money for Sheet Metal Contractors and Fabricators." Write us or ask your Republic Toncan Iron Distributor for a copy.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES • CLEVELAND 1, OHIO

Berger Manufacturing Division • Culvert Division
Niles Steel Products Division • Steel and Tubes Division
Union Drawn Steel Division • Truscon Steel Company
Export Department: Chrysler Bldg., New York 17, N. Y.



Republic

TONCAN COPPER MOLYBDENUM **IRON**

Other Republic Products include Carbon, Alloy and Stainless Steels—Pipes, Sheets, Plates, Strip, Bars, Wire, Rails and Nails, Tubing

All Penn Heating Units are **PACKAGED for PROFIT!**



PACKAGED BY PENN describes our complete line of oil or gas fired heating units because they are completely factory assembled and delivered to you ready for immediate connection and use.

95% of the cellar work you usually do has been eliminated by unit design and construction. The proper gun type burner, hearth, controls, fittings, switches, wiring—everything is factory mounted and tested. This factory co-ordination results in greater heating efficiency, saves you time, labor and installation headaches... makes selling easy.

Dealers who handle heating units *Pack-*

aged by Penn will be able to offer a full line of modern low cost units that wilt competition with both price and performance. Conversion prospects may be readily won over to Penn Packaged Units by reason of low comparative cost. Less installation work, fewer service calls and negligible parts inventories will mean more time for selling, more profitable sales.

Get the complete story today so you will be ready with Penn when the present emergency is over and we again build the finest heating units *Packaged for Profit.*

PACKAGED by PENN { BOILER BURNER UNITS
AIR CONDITIONER UNITS
PENNGUN WATER HEATERS
HYDRO-AIRE (SPLIT SYSTEMS)



BOILER & BURNER
MANUFACTURING CORP.



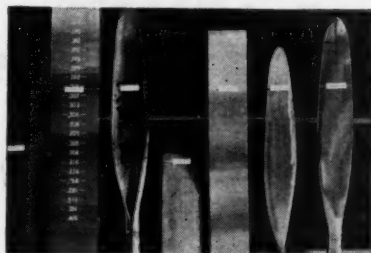
ARMCO SHOP NEWS

THE AMERICAN ROLLING MILL COMPANY, MIDDLETOWN, OHIO

Steel "Props" Made By Taper-Rolling Method In Half Former Time

War speeds up thinking, developments, inventions of all kinds. An example of this is ARMCO's taper-rolling process, which doubled the production of steel warplane propellers, saved thousands of man-hours and countless tons of precious alloy steel.

Manufacturers used to taper the plates for propeller blades by costly machining. It was slow work, wasted half of each plate, and consumed thousands of valuable man-hours. ARMCO Engineers knew there'd be a big saving if the plate could be tapered at the mill. So they designed ingenious machinery that tapers the plates in a few swift passes through the mill.

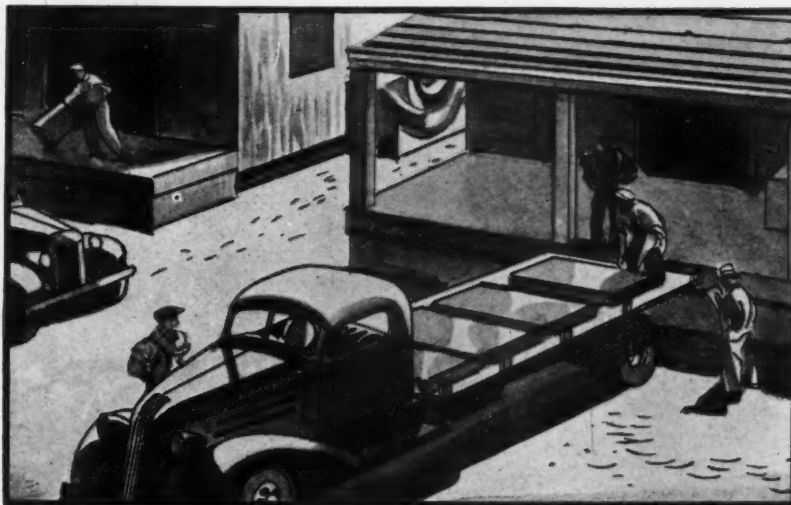


But that was only half the job. It took experienced mill men, with years of "know-how" to roll plate after plate to the highest aircraft standards. These alloy steel plates make stronger, tougher propellers for the deadly warplanes that are winning our battles in the skies.

Mac's Chat

Here's one for the Chick Sales book—a letter written to a hillbilly draftee by his ma. Dear Son: Since you went away pa got hisself a job, the first time he's worked in 40 years. He had so much money we didn't know what to do with it so we went to Rears and Sobuck and got one of those fancy bathrooms so many people put in their houses. Now we got a big white trough in one corner for heavy washing, a smaller one beside for light work. What I like best is the low bowl—you wash one foot and while you are dry-

Where Do We Go From "There"?



It's easy to say that there'll be so much business for sheet metal contractors after the war that you won't have to stir a foot to get it.

But that's not the way to build an enduring and profitable customer-list. There are ups-and-downs ahead, just as there always have been, and you will want customers—and suppliers—who will stick with you in lean times as well as lush.

The ARMCO Distributor is especially well fitted to help you do this. He's your friend and neighbor. He will stock the most complete line of special and regular sheets that you could find anywhere—ARMCO Ingot Iron, PAINT-

GRIP, Stainless Steels, Galvanized Steel and Copper-Bearing Steel, and others. And he prides himself on his snappy deliveries—that is, in normal times.

That's not all. The ARMCO Distributor will provide many helpful shop and business-promoting services—a free subscription to ARMCO Shop News; Spring and Fall job post-cards; job and truck signs; blotters; newspaper advertisements; shop and office instruction booklets, and many others.

Where do we go from "there"? You already have the answer if you do business regularly with the ARMCO Distributor.

ing it you pull a chain and fresh water runs in to wash the other foot. It has two covers. One I used for a chopping board and the other we framed grandpappy's picture with for the parlor.

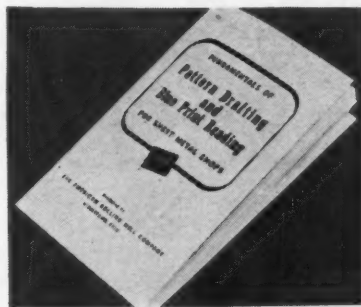
P. S. They are awful nice people who delivered the stuff—they gave us a big roll of writin' paper—Ma.

Back to Fundamentals

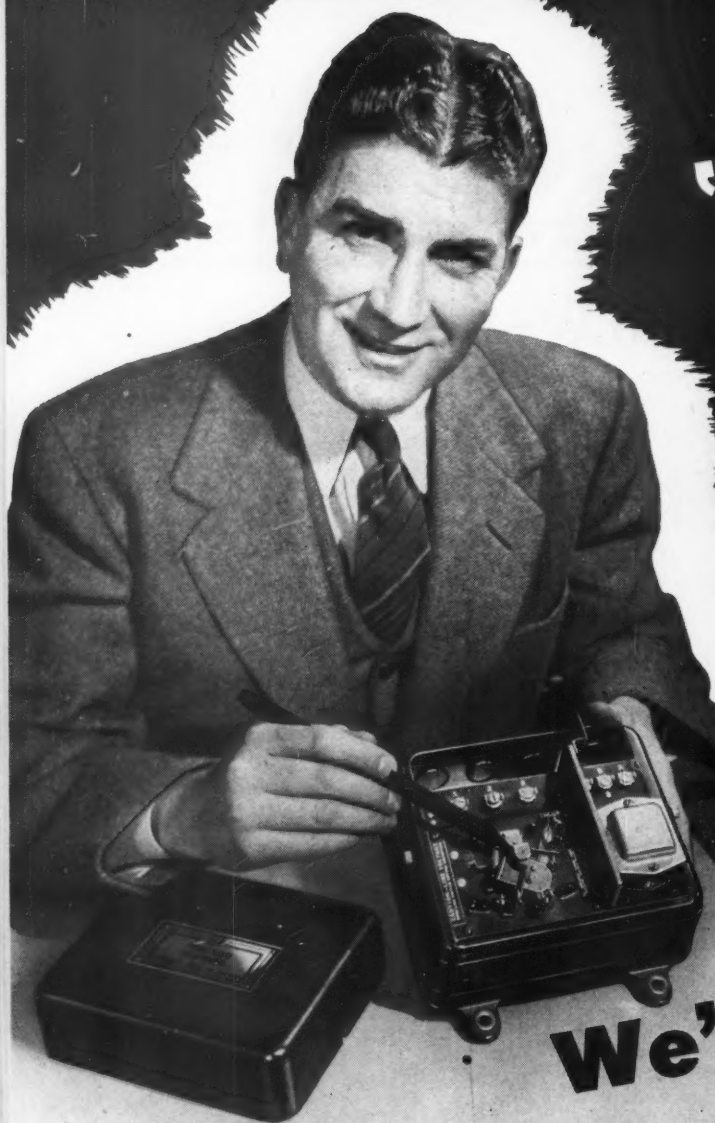
What's at the bottom of a sheet metal contractor's business? Pattern drafting and blue print reading, of course.

Even the simplest sheet metal job requires a working knowledge of these basic things.

So, if you haven't a copy of the ARMCO book, "Fundamentals of Pattern Drafting and Blue Print Read-



ing," by all means order one. Written and illustrated by Martin J. Reubenshaw, the well-known authority on this subject, this valuable book is useful to both veteran and apprentice. The price is modest, only 20 cents in stamps. ARMCO Advertising Division, Middletown, Ohio.



**"My stoker
service
department
is getting
a break..."**

We're featuring THERMO-PILOT™

*Fuel-Saving
Starts With*
CONTROL

• Look at it. No gears... no ratchets in *this* stoker timer relay. Thermal action takes over the job of the old-style timing mechanism... and does it better.

And there aren't so many calls for stoker service that turn out to be just more cleaning jobs on sluggish controls with complicated motors.

THERMO-PILOT is easy to install, too. Mount it in any position. Two simple levers make all adjustments. You'll get dependable, trouble-free, hold-fire control.

New? Yes, new to the trade but not new in experience. It has been tested through four heating seasons on thousands of actual home installations.

Interested? Write for the new booklet that tells the story of thermal action for hold-fire stoker operation.

PERFEX CORPORATION
20 W. Oklahoma Avenue, Milwaukee 7, Wisconsin.

Please send me the new booklet on Thermo-Pilot.

Name.....

Address.....

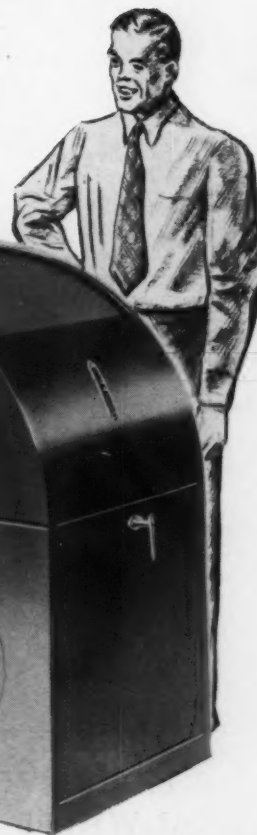
City..... State.....



Perfex CORPORATION
MILWAUKEE 7, WISCONSIN

Your Best Salesman— SATISFIED CUSTOMERS

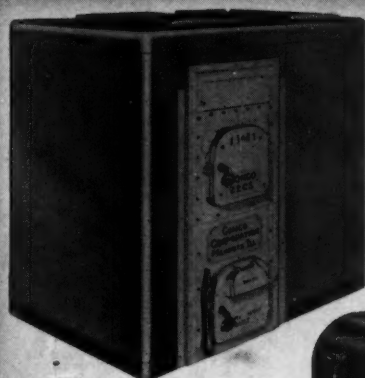
Equipment that promises much makes easy customers; equipment that delivers much makes satisfied customers. CONCO's smartly styled post-war line will *promise* and *deliver* what your customers want . . . beauty, convenience, economy, long-life, freedom from break-down. Satisfied customers build for *your* future. CONCO is the line with a future . . . for you!



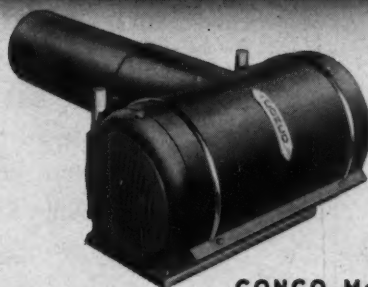
CONCO

DIVISION OF H. D. CONKEY & COMPANY

MENDOTA, ILLINOIS



CONCO Coal-Burning Gravity and Forced Air Heating Units.



CONCO Magic Spray Conversion Oil Burner.



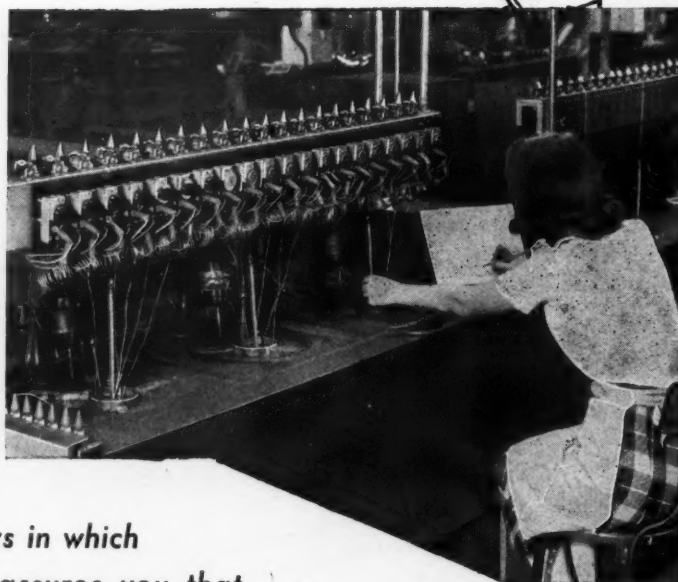
CONCO—attractive, modern, time-tested Domestic Stokers.

CONCO Oil-Fired Winter Airconditioner. Covering domestic requirements.



A SIZE AND TYPE FOR EVERY HEATING REQUIREMENT

LEAVING NOTHING TO CHANCE



*One of the many ways in which
White-Rodgers assures you that
every control will perform as promised.*

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action Principle incorporating solid-liquid filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.



Part of the final check of every White-Rodgers temperature control is the cold bath immersion test. Here, in constantly circulating fluid of predetermined temperature the controls are checked for positive switch contact and reaction to temperature changes. At this stage, too, final adjustment of the dial is made so that the calibration thereafter is always accurate.

This, and other testing equipment, has been operating since the first White-Rodgers Control was built—operating to assure accurate temperature control to you—and to safeguard White-Rodgers' reputation in the heating and refrigeration fields.

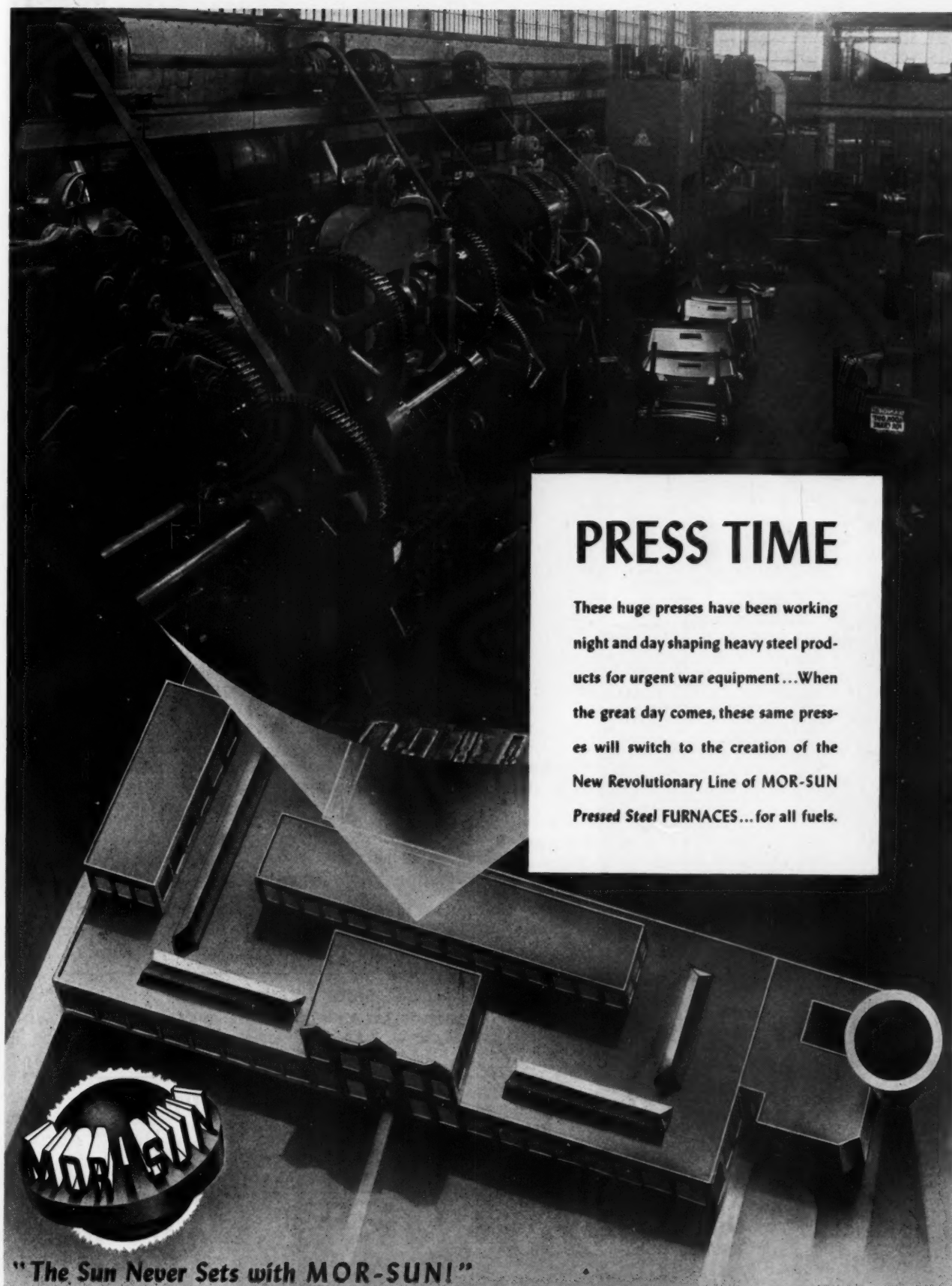


**WHITE-RODGERS
ELECTRIC CO.**

1215E Cass Ave.

St. Louis, Mo.

Controls for Heating • Refrigeration • Air-Conditioning



PRESS TIME

These huge presses have been working night and day shaping heavy steel products for urgent war equipment...When the great day comes, these same presses will switch to the creation of the New Revolutionary Line of MOR-SUN Pressed Steel FURNACES...for all fuels.

"The Sun Never Sets with MOR-SUN!"

MORRISON STEEL PRODUCTS, INC. BUFFALO 7, N.Y.



MONCRIEF Oil Fired Air Conditioning Units For Immediate Shipment



THIS prewar manufactured stock of smartly designed units, attractively finished in Green Hammerloid baked enamel, are especially designed to be used with any standard type oil burner.

The heavy duty heating element and extra large radiator, constructed of heavy gauge steel, are electrically welded into seamless, leakproof, gas tight units. The heavy gauge, electrically welded, steel construction also eliminates expansion and contraction noises common in many units.

The smartly designed and beautifully finished cabinet with its rounded corners and concealed butt joints is equipped with non-buckling inner linings for the heating compartment.

Equipment on all units include, automatic humidifier . . . draft stabilizer . . . fan switch . . . filters . . . blower and motor.

SIZES AVAILABLE

RATINGS ARE B.T.U. CAPACITIES AT REGISTER			
65,000	75,000	100,000	125,000
175,000	200,000	275,000	

Write for literature and prices.

**WARM AIR
FURNACES
FURNACE PIPE
AND FITTINGS**



**AIR CONDITIONING
SYSTEMS FOR
COAL . . .
GAS . . . OIL . . .**

THE HENRY FURNACE CO.

MEDINA, OHIO

WHAT MAKES A GOOD SHEET METAL MAN?



We know what makes a good workman in Superior's steel mills. Attitude, experience and training are mighty important, but these qualifications would be wasted without good tools and good materials to work with. The same is true in a sheet metal shop.

Take steel sheets, for example. If they have a high degree of workability, your work goes faster and easier. If the zinc coating is uniform and tenacious,

difficult forming operations are simplified and you have a cleaner, better job when you are through.

Superior has long specialized in producing high quality galvanized sheets for the sheet metal trade. That we have succeeded in producing quality material is attested by the wide popularity of Superior trade-marked sheets. Ask your jobber about future supplies of Superior and Continental steel sheets.

THE SUPERIOR SHEET STEEL CO., CANTON, OHIO • CONTINENTAL STEEL CORP., KOKOMO, INDIANA



SUPERIOR

CONTINENTAL STEEL CORPORATION

PRODUCERS OF STEEL SHEETS AND MANUFACTURER'S WIRE

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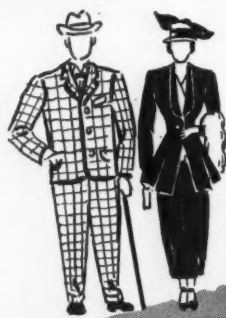
y, 1944

Leadership IS A HABIT

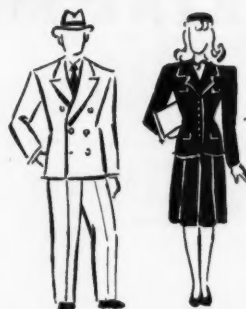
WITH **WEIR-MEYER**



1866



1917



1944

Three GENERATIONS

Three generations of homeowners have depended on WEIR-MEYER for better Heating Equipment. From a small business established in 1866 to a major source of supply for Heating Equipment for the Armed Forces is the WEIR-MEYER record. The same sound, basic principles that saved homeowners millions of fuel dollars found quick acceptance for Military and other vital war jobs.

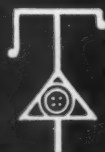
FOR POST WAR

Three-quarters of a century of practical, on-the-job experience has given WEIR-MEYER "know-how" unequalled in the industry. War demands greatly accelerated activity in all departments—design, engineering, production. That's why it's logical that WEIR-MEYER Postwar Heating Equipment will continue to set standards for the industry.

Limited quantities of WEIR-MEYER Furnaces are now available for ESSENTIAL civilian needs . . . write us your requirements.



**Badge of Quality
IN
FURNACES
AIR CONDITIONERS
FOR
COAL - OIL - GAS**



THE MEYER FURNACE COMPANY

WEIR and MEYER FURNACES · AIR CONDITIONERS for COAL - GAS - OIL

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ON EVERY FIGHTING FRONT

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IN ALL STANDARD SIZES
SHAPES AND MARKS

WAR RESEARCH

TAUGHT US HOW TO DO A
GOOD JOB... EVEN BETTER

Specify
HUSSEY
FOR POST WAR PLANNING

While our production facilities are still allocated 100% to essential war requirements, our intensive wartime research and the tremendously accelerated output will enable the Hussey organization to play an equally important role after Victory. With your post-war blueprints before us—we shall be glad to aid in engineering with Hussey Copper the jobs that only copper can do so well.

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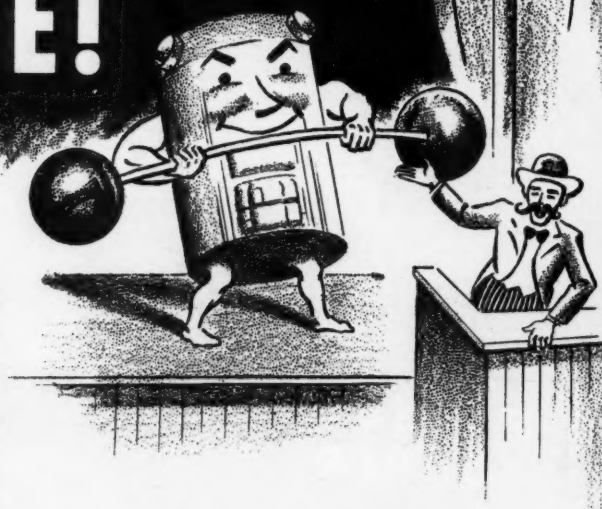
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SERIES 600

BUY MORE WAR BONDS AND STAMPS

WARM AIR FURNACES . . . AIR CONDITIONING UNITS . . . COAL . . . GAS . . . OIL
THE C. A. OLSEN MANUFACTURING CO. ELYRIA, OHIO



IN the spotlight on the "Hit Parade" of home heating equipment stands Luxaire—a winner in the warm air heating and air conditioning field.

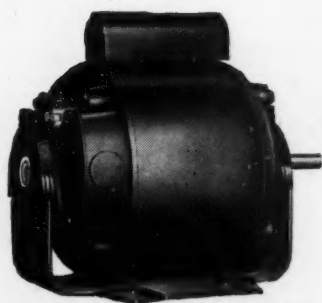
Leadership first depends upon the ability to foresee, to develop, and to achieve. Today, skilled Luxaire engineers have excellent research and development facilities at their disposal. Tomorrow's market can depend on Luxaire for advanced heating equipment.

To produce these quality Luxaire products in greater and greater quantities, the vast manufacturing facilities of the new, expanded Luxaire plant will swing into action — a plant now equipped with time-saving machinery, streamlined production and fabricating facilities.

Luxaire's desire and ambition for the future is to supply and satisfy to the limit of its resources the demands of the heating trade.

An "all-out" Luxaire program will help you insure your future in the heating field.

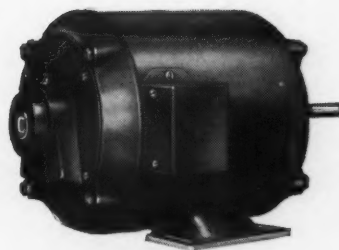
Luxaire



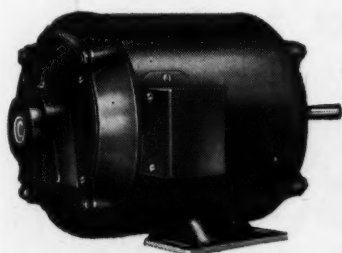
Capacitor Single Phase Induction Motor — Built in sizes 1/20 to 20 horsepower



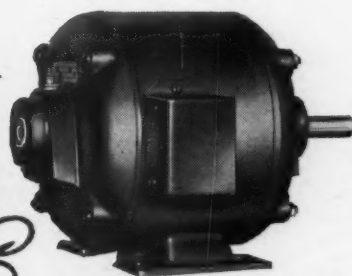
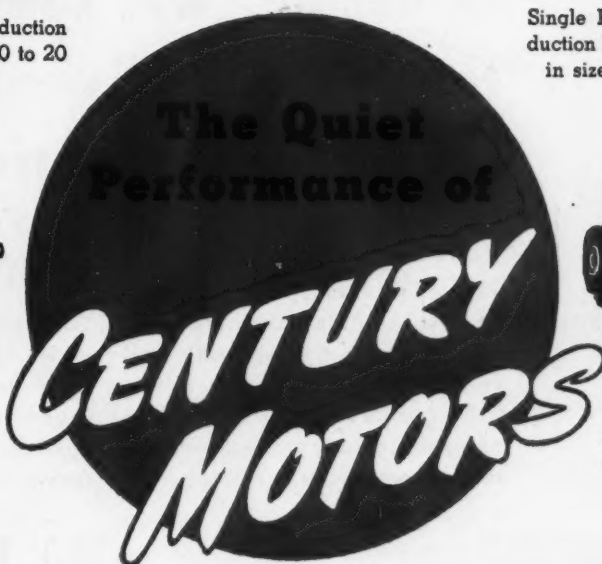
Split Phase Induction Motor—Built in sizes 1/20 to 1/3 horsepower



Single Phase Repulsion Start Induction Brush Lifting Motor—Built in sizes up to 20 horsepower



Direct Current Motor — Built in sizes 1/20 to 300 horsepower



Squirrel Cage Polyphase Induction Motor — Built in sizes 1/6 to 600 horsepower

Means More Comfortable Air Circulation and More Satisfaction for Your Customers

Quiet starting and quiet operating is built into every Century motor for fan, blower, unit heater, and other air circulating applications, because your customers demand it. Unusual freedom from vibration, rigid construction, precision bearings in perfect alignment, unique end bumpers, and many other construction features contribute to the unusually quiet operation of Century motors.

There's a wide range of sizes and types, from 1/20 to 600 horsepower. Many can be furnished in both rigid and cushion base rubber mounted frames.

Whether you manufacture, sell, or install motor driven equipment, it will pay you to bring your electric motor drive problems to a Century engineer. His experience and advice can be valuable to you.



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1806 Pine Street, St. Louis 3, Missouri

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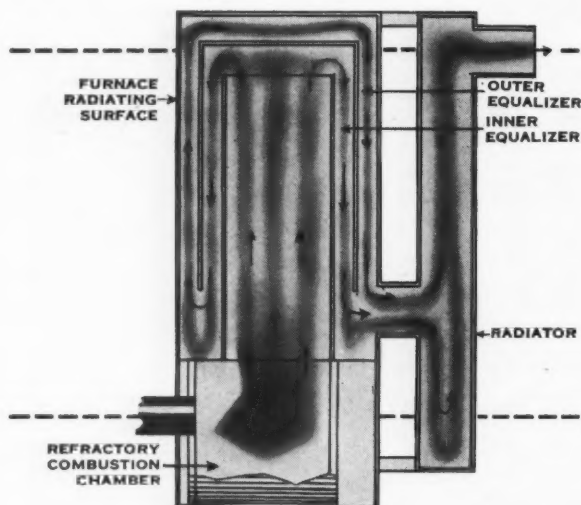
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in design, will continue
to give **RUDY** dealers a
product with "extra features"

Year after year, Rudy dealers have enjoyed sales and profit advantages, thanks to the "extra features" created by Rudy ingenuity and research. The satisfaction in selling Rudy quality is second only to that of owning a Rudy product—a good thing to remember in making your

plans for the coming heating boom.

The same ingenuity in design which has made the Rudy agency so attractive is at work in Rudy's laboratory today, shaping the answers to tomorrow's heating requirements.



THE HEAT EQUALIZER

ONE OF MANY INGENIOUS DEVELOPMENTS
IN THE HISTORY OF **RUDY** FURNACES

Like a heat "reservoir," Rudy equalizers store up heat in the combustion chamber, releasing it slowly as outer surfaces cool. Less frequent burner operations and more even heating means greater fuel savings. For detailed information on the Equalizer principle, write department A today.

WRITE TODAY: FOR OUR FREE BI-MONTHLY BULLETIN



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Stainless *—for consumer preference* Strip *—for volume production*

In postwar homes, refurbished for better peacetime living, the beauty, strength and practicality of stainless steel will be widely engaged. New stainless products will be available—at lower cost—reflecting the production economies of Superior Stainless Strip Steel . . . furnished in long coils, of controlled composition, to your exact specifications.

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May, 1944



IT'S *OPEN SEASON* NOW FOR FURNACE REPAIRS

With the heating season practically over it's none too soon to begin planning to put next winter's furnaces in order. New ones will be difficult to get, so the old units may have to be made to do for at least another season.

Every furnace in use needs some attention to give utmost heating efficiency and conserve fuel. After a long winter's firing, cleaning at least, is in order and frequently some repairs. Look to OSBORN as a dependable source of supply for your furnace work needs—for smoke pipe, elbows, tees and fittings—for registers, dampers, asbestos paper, cement and filters, as well as new furnaces. In particular do not overlook the possibilities of selling automatic control sets which are available now in several leading makes.

Begin an organized effort to inspect furnaces in your community *right now*. Get an early start on this business which is not only highly profitable to you but also a big help to the war effort.

THE J. M. & L. A.
OSBORN Co
CLEVELAND, OHIO

BUFFALO • CINCINNATI • DETROIT
Manufacturers—Distributors of Metals and Metal Products

PRIME METAL SHEETS • EAVES TROUGH • CONDUCTOR PIPE, ETC. • ROOFING NAILS
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A DEPENDABLE SOURCE OF SUPPLY FOR 85 YEARS

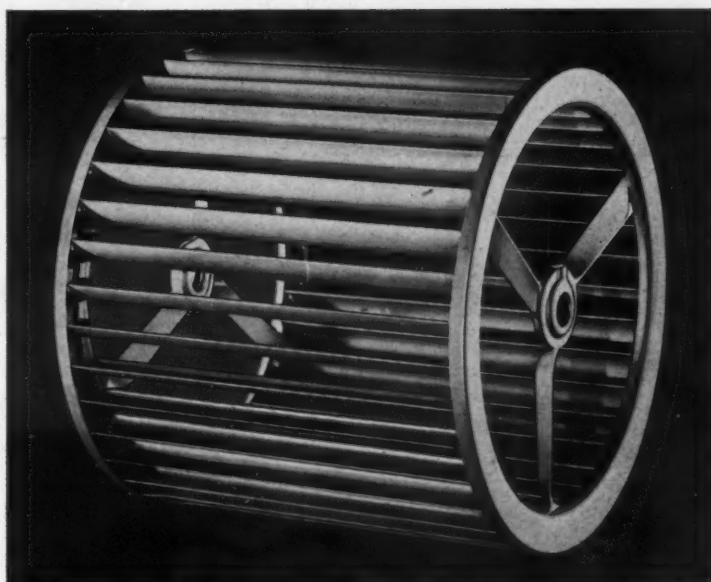


rely on

Airstream BLOWER WHEELS

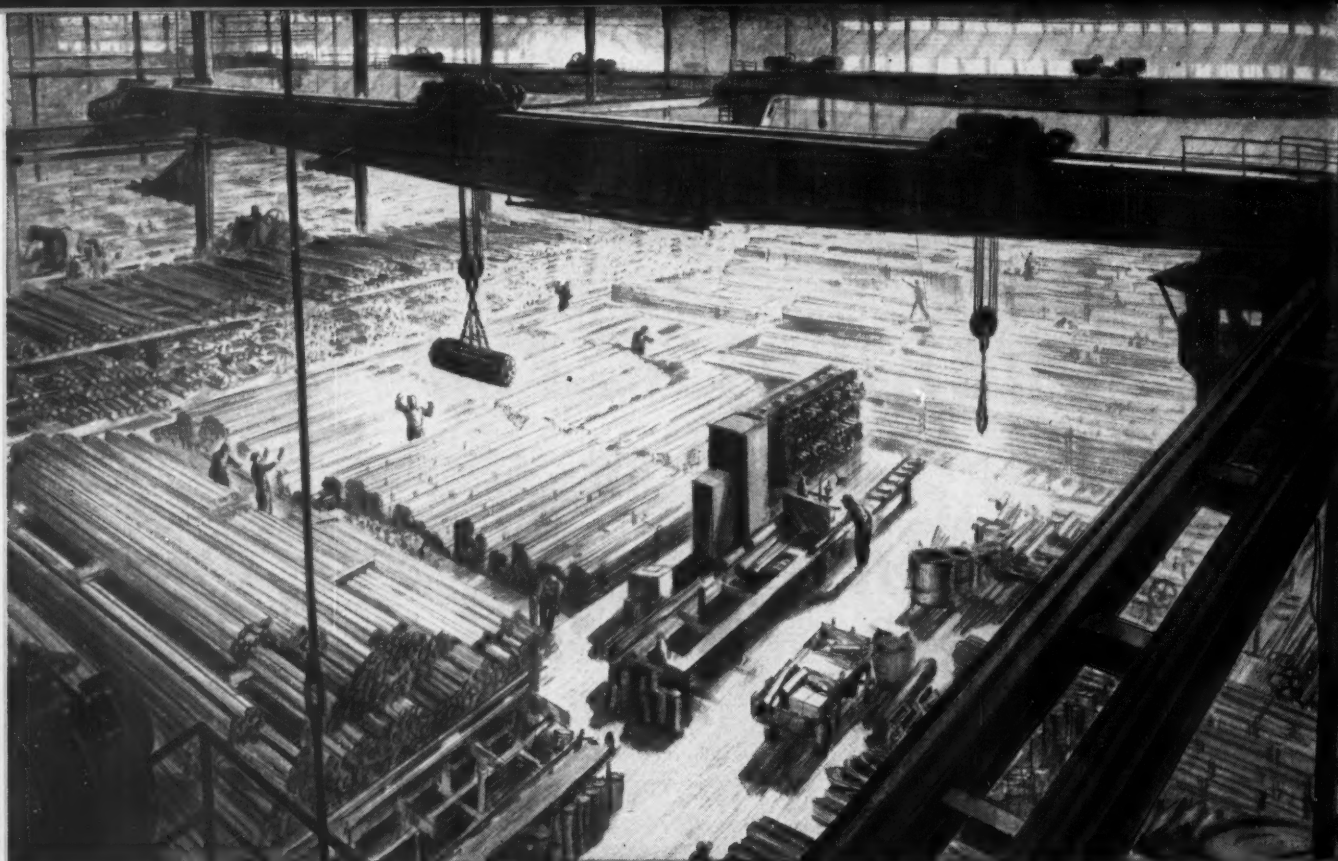
Dependable because they are rigid and strong. Their strength lies in their construction. Made on automatic equipment — the blade section is one piece. The end rings with integral hubs are securely spot welded to the blade section making the three piece assembly rigid and strong.

Dependable because Morrison Engineers work closely with manufacturers of warm air heating and air conditioning in the planning of proper equipment to use in their units. Morrison invites the manufacturer to use this service.



Airstream Blower Wheels are made in many sizes. By utilizing Airstream Wheels and Morrison's Engineering service, the manufacturer can easily build his own blower assemblies.

MORRISON PRODUCTS, INC.
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When you need steel quickly get in touch with your nearby Ryerson plant. Every kind of steel is in stock—more than 10,000 shapes, sizes and analyses. And Ryerson deliveries set a standard for quick dependable service.

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Write for a Ryerson Stock List, your guide to immediate steel.

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Bars	Shafting	Reinforcing Steel	Tool Steel
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Joseph T. Ryerson & Son, Inc., Steel-Service plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Pittsburgh, Philadelphia, Jersey City

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AMERICA



Air Conditioning is Our Baby—Let's Keep It

IN 1930, American Artisan began the serious publication of articles on engineering forced air heating systems. We called those first systems "fan blast engineering" and the author was Platte Overton. A couple years before that, Jimmy Miles had dedicated himself as a one-man missionary to preach the advantages of forced air circulation and despite the limitations of his fan which produced little more than gravity stimulation he did get numerous dealers to install his systems.

By 1933, when the depression hit, this new method of residential heating was firmly established and practically every town in the country had one or more contractors who were satisfying the public's demand for this better type of heating.

Along with the fans and blowers came a revival of interest in humidification and a surge of interest in filtering of the air, automatic control, automatic firing devices.

Residential winter air conditioning had arrived.

We cite this brief history to introduce an interesting fact which some readers have forgotten—when we started to popularize winter air conditioning and home owners got really serious in buying our type of heating, the radiator folks sought to combat our progress by pooh-poohing the whole idea and launched a campaign to tell owners that air conditioning is really 80 per cent heating—just heating.

Remember?

Lately industrial history has begun to repeat itself. Our type of winter air conditioning began to feel so secure in our public acceptance (and perhaps getting a little soft-hearted) we let ourselves in for some grandiose schemes to pool all types of heating into one gigantic program to convince the public that owners can have indoor air conditioning regardless of what type of unit generates the heat.

We seemingly lost sight of the fact that only with a warm air furnace can all the characteristics of winter air conditioning—humidification, cleaning, control, ventilation—be obtained by the home owner at a reasonable cost. We forgot that with a boiler as the source of heat, all these other characteristics must be

secured by adding equipment which costs money and requires a separate system to function.

The climax came, so this publication believes, when the warm air industry was asked to drop the term air conditioning as a definition of forced warm air heating. Winter air conditioning was to be thrown up for grabs.

It's high time, we believe, for our industry to settle down to the hard-headed business of protecting our acceptance and extending our market by concerted planning how we can dominate the winter air conditioning market after the war.

What we need to do now is to lay plans which, after the war, will make winter air conditioning synonymous with warm air furnace heating.

It will be both stupid and foolish for warm air heating to drop the term "air conditioning." It will be equally foolish if we permit the boiler industry to have any part of winter air conditioning. We will be exceedingly negligent if we permit the situation to slide along, doing nothing to protect our stake in this popular phrase which the public now thinks of automatically when considering a new heating system.

Right now is none too early to lay plans. Several things must be done to consolidate our position. First, we must make sure that every contractor in the industry is able to design and install systems which will provide every function of winter air conditioning. Second, we must make sure, through codes of design and installation, that the public can and will get just the degree of air conditioning they seek to buy. Third, we should be sure the equipment we will sell can provide all of the functions we guarantee. Fourth, we should seek ways and means of protecting the public from all fly-by-nights who will seek to get rich by "cleaning up" in a popular market without having the knowledge or the honesty to provide what they sell.

Finally, it's high time everybody in this industry got together to prepare an industry-wide program which will convince the public and satisfy the public that in warm air winter air conditioning lies the best, the most economical, the surest path to indoor comfort.

Winter air conditioning is our baby. Let's keep it!

L-79—New Repair Order.

- 1—On a proper certification, without any priority rating, permits a homeowner to buy *for replacement*, a furnace, a furnace fan 16 inches in diameter or under without motor, and "all other equipment, material or parts used to heat buildings, including heat controls." This would seem to include prefabricated ducts, registers and grilles, smoke pipe, stove pipe, barometric dampers. One WPB interpretation says "furnace fan" means centrifugal wheel and scroll but not a "packaged" blower.
- 2—For the owner of a gravity, coal-fired furnace, any items not originally in the system (furnace fan, controls) may be applied for on Form 1319 filed with the local WPB. If approved the AA-3 rating will be assigned.
- 3—Gives a dealer or a jobber an automatic AA-3 priority rating to buy from a jobber or a manufacturer any of the items shown in List A.
- 4—Permits you to sell any *used* item in List A.
- 5—If you are a "repair man" as defined in CMP-9A you may buy only as much as permitted in inventory in CMP-9A. A "seller" who is not a repair man (jobber or contractor) may buy only as much as permitted in inventory of L-63.
- 6—You may not buy sheets under L-79.

THE above is a summary of the important sections of the amendment order L-79. L-79 as amended April 25 replaces the previous L-79 and on furnace fans replaces L-123 for fans 16 inches in diameter or under, also replaces L-280 and P-84 which are now revoked.

Accordingly amended L-79 now becomes our industry's repair and replacement order and, as such, will be the most important order for the next few months. It is suggested, in view of this, that every reader study carefully the text of the order which follows—

PART 3288—PLUMBING AND HEATING EQUIPMENT (General Limitation Order L-79, as Amended Apr. 25, 1944)

§ 3288.31 *General Limitation Order L-79*—(a) *What this order does.* The purpose of this order is to conserve the supply and direct the distribution of plumbing, cooking and heating equipment by preventing the sale of certain essential items on List A except for necessary replacements, or on rated orders. These are items, the production of which is restricted, and which can be made available to essential users only. The order provides a rating to enable sellers to get these items for necessary replacement. It permits other items of plumbing and heating equipment to be bought by sellers on unrated orders without restriction but provides a preference rating to enable sellers to buy these non-restricted items when a rating is needed. No preference ratings are assigned to consumers and deliveries to consumers for replacement and repair do not have to be on rated orders. *It must be noted, however, that deliveries of certain parts for plumbing and heating equipment are also subject to applicable provisions of other limitation orders.* The order supersedes the previous version of L-79, as well as General Preference Order P-84.

(b) *Assignment of preference ratings.* Preference rating AA-3 is assigned to any seller to enable him to get the following:

- (1) Equipment shown in List A, including repair parts.
- (2) Repair parts only for items on List B, and repair

parts for stoves rationed by the O.P.A. under Ration Order 9-A.

(3) *All other equipment, material and parts which are used to supply store and heat water, to cook food, to remove waste matter and water borne waste, to treat waste matter chemically, and to heat buildings, including electric heat controls.*

Any rating under this paragraph (b) cannot be used, however, to get equipment specifically designed for industrial processing, fire protection, the production or transmission of power, or for use by a public utility; equipment using electricity as fuel; heat exchangers subject to L-123; domestic water systems as covered by L-257; liquefied petroleum gas equipment as defined in L-86; fans, blowers and exhausters as covered by L-123 except those on List A of this order (L-79); steel or wrought iron pipe or steel sheets; industrial and domestic sump pumps; equipment specifically designed for refrigerating or dehumidifying; or portable items such as pans, domestic stove lid lifters and domestic stove poker which are not designed to be built into or fastened to the building in which they are used. Directions will from time to time be issued specifying items which are subject to this paragraph (b) and items which are excluded.

(c) *Exception.* No rating is assigned to any delivery to which a rating is assigned by CMP Regulation 9A.

(d) *Inventory restrictions on sellers.* (1) A seller who is a repair man as defined in CMP Regulation 9A may not accept delivery of any item of parts or materials obtained by applying a rating under this order if his inventory of that item of parts or materials is or would be accepting delivery become larger than he needs to continue his repair and maintenance services for a 60-day period, according to his current method of operation. However, if the supply of any item which he has on hand is less than the permitted amount, he may accept delivery of the smallest commercial amount of that item which his distributor normally sells, even if that will increase his supply beyond the amount specified.

(2) A seller who is not a repair man as defined in CMP Regulation 9A is subject to the limitation of inventory prescribed in Order L-63.

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(e) *Up-rating.* In the case of ratings applied or extended by sellers under Order P-84 prior to its revocation, deliveries may be re-rated in accordance with the provisions of Priorities Regulation No. 12. However, any person with whom such an order was placed is authorized to treat it as re-rated without requiring any notice or certificate to be furnished to him by the seller: *Provided*, That any manufacturer or seller who re-rates any orders placed with him under this paragraph must so re-rate all orders placed with him which can be re-rated.

(f) *Restrictions on deliveries of items on List A.* No person may deliver or accept delivery of equipment included in List A of this order except:

(1) Equipment which has previously been used.

(2) Equipment which is delivered to fill a rated order.

(3) When the delivery is to a consumer for installation to replace existing equipment which is worn out, damaged beyond repair or destroyed, but not to replace useable equipment or to make a substitution which would provide more extensive facilities than are necessary to replace the part or parts worn out, damaged or destroyed.

(g) *When a consumer needs a preference rating and how he gets it.* Consumers are not assigned ratings by this order and will not need ratings unless they want to buy items on List A for purposes other than replacement. *When a rating is needed, application may be made on Form WPB-1319 to the nearest War Production Board field office.* However, if the material is to be used in new construction of a type which is restricted under Order L-41, the consumer must use the form specified in Schedule C of that order. Industries and government institutions may use CMP Regulations 5 and 5A ratings for repair parts and replacement items.

(h) *Consumer's certificates.* No seller may deliver an item on List A to fill a consumer's unrated order unless he obtains a certificate in substantially the following form:

I need the item included in this purchase to replace equipment worn out, damaged beyond repair, or destroyed. I will not use it to replace useable equipment or to make a substitution which would provide more extensive facilities than are necessary to replace the parts which are worn out, damaged, or destroyed.

Address of installation

Consumer's signature

Address

Any certification is a representation to the War Production Board as well as to the seller. No one may deliver relying on a certification being true if he knows or should know it is false, but anyone who reasonably relies on the truth of a certificate is not to be held responsible if it turns out to be false. No one shall make a false statement in a certification. Sellers shall retain certificates in their files for two years for inspection by WPB representatives.

(i) *Salvage.* No person may install equipment on List A for replacement unless he takes any replaced metal parts or equipment, not coated with a fused or nonmetallic surface, and arranges for its further use, or turns it in for salvage to any authorized scrap metal dealer within thirty days after the replacement. This requirement does not mean that the installer is entitled to take old equipment without the owner's consent or without crediting him with its value.

(j) *Records.* All persons affected by this order shall keep and preserve for not less than two years accurate and complete records concerning inventories and sales.

(k) *Audit and inspection.* All records required to be kept by this order shall, upon request, be submitted to audit and inspection by duly authorized representatives of the War Production Board.

(l) *Violations and false statements.* Any person who wilfully violates any provision of this order, or who, in connection with this order, wilfully conceals a material fact, or furnishes false information to any department or agency of the United States is guilty of a crime, and upon conviction may be punished by fine or imprisonment or both. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using, material under priority control and may be deprived of priorities assistance.

(m) *Appeals.* Any person affected by this order may appeal from its provisions by filing Form WPB 1477 (formerly PD-500) with a field office of the War Production Board.

(n) *Communications.* All reports to be filed and other communications concerning this order, except appeals, shall be addressed to the War Production Board, Plumbing and Heating Division, Washington 25, D. C., Ref: L-79.

(o) *Definitions.* For the purposes of this order:

(1) "Seller" means any person who buys plumbing, heating, or cooking equipment for resale, whether or not he makes the installation. *A manufacturer who sells directly to the consumer is to be considered a seller with respect to those sales.*

(2) "Consumer" means any person who buys plumbing, heating, or cooking equipment for installation or use on premises owned or occupied by him.

Issued this 25th day of April 1944.

WAR PRODUCTION BOARD,
By J. JOSEPH WHELAN,
Recording Secretary.

LIST A

The following items of plumbing and heating equipment:

1. Furnaces, heating (as defined in Order L-22), and cast iron boilers, heating (as defined in Order L-187), but excluding furnace-burner and boiler-burner units in which the boiler or furnace is designed for use of oil or gas only as a fuel.

2. Water heaters, not electric or industrial (direct fired and indirect fired as defined in Order L-185), but excluding direct hand fired (solid fuel) hot water heaters of the following types: bucket-a-day stoves, dome-type water heaters, and service water and tank heaters.

3. Tanks, including range boilers and expansion tanks (as defined in Order L-199).

4. Cast iron tubular radiators.

5. Steel low pressure heating boilers not designed to withstand a steam pressure of more than 15 pounds per square inch. All types exclusive of those for marine, ship-board, or locomotive use.

6. Furnace fans 16" diameter and under, less electric motors.

7. Forced draft blowers for warm air, hot water and low pressure steam systems.

INTERPRETATION 1

NOTE: Interpretation 1 is obsolete.

INTERPRETATION 2

Office of Price Administration requirements not affected. Question has been raised as to whether this order dispenses with the necessity of conforming to the requirements of O. P. A. Ration Order 9-A.

The words "without restriction" as used in L-79 refer only to restrictions placed by the War Production Board, and Order L-79 is not intended in any way to affect rationing or other requirements of the Office of Price Administration or any other agency. (Issued Feb. 29, 1944.)

INTERPRETATION 3

SUBSTITUTION REQUIRING CHANGE OF DISTRIBUTION SYSTEM PROHIBITED

The restrictions of paragraph (f) (3) of Limitation Order L-79 prohibit the substitution of one type of heating system for another (e. g. cast iron heating boiler for heating furnace) if it will require the change of a useable distribution system. (Issued Apr. 13, 1944.)

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Arnold Kruckman's

Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



"Small Business" Is Everybody's Business

THE consensus here is that Mark Twain aptly described Washington's relation to smaller business when he observed that everybody talks about the weather, but no one does anything about it. This is, of course, a very free and rough summation, but it tells the story as it is seen broadly by unemotional observers.

We have the Murray Committee in the Senate, which has been listening to thousands of people in its hearings for many months; and we have the Patman Committee in the House which also has listened to thousands both here and in many other places. Both Committees have issued reports and have made interesting recommendations. No one actually knows how many Committees in Congress have focussed attention on the problems of smaller business. It is confusing even to professional observers in Washington to hear about new investigations by Committees which have not previously been identified with the subject.

Everybody's Studying Small Business

This reporter set out to list the Committees, and asked the officials of the existing Small Business Committees for help. Each of the special Committees, incidentally, has a well-organized staff which does the detail work and the leg-work required by the investigations. The job has made necessary the use of expanding quarters and increasing clerical and technical help. Undoubtedly many men and women have spent considerable time in traveling to and from the hearings, and others have spent an appreciable total of time in traveling around the country in collecting the data required by the Committees. But it is doubtful whether or not there is any central source where it may be possible to find an index to all the really important information that has been assembled.

Smaller business has been studied by the Interstate and Foreign Commerce Committees of the House and the Senate; and by the Foreign Commerce Committee of the Senate; also by the Finance Committee of the Senate; and by the Military Affairs Committees of the House and the Senate; and by the George Postwar Committee of the Senate as well as by the Speaker's Postwar Committee in the House. Subcommittees of these main Committees have made smaller business problems their sole business. And subcommittees of other main Committees have also made inquiries. It would take special work, and possibly the whole time of a staff of several persons, to determine with even approximate accuracy the identification of the Com-

mittees, and the names of the members. It would be unwise to assume that most of these Committees and the members of Congress and their assistants are doing purely a perfunctory job.

390 Bills Before Congress

Some four or five months ago the Department of Commerce listed over 390 bills introduced in both Houses designed solely to aid smaller business. This reporter daily scans the bills as they issue from the hopper, and it is certain at least over a hundred have been introduced in the interval since Commerce made its digest. It was the purpose to give you some general idea of the collective scope of these five hundred or more bills; but it is indicative of the effect of the war that two efforts to obtain the bills for the necessary study have been frustrated by the mails. Each time so much of the information was delayed or lost that it was not practicable to undertake the job.

There is without question a very sincere purpose among the majority of those who write the bills and those who work on the Committees to do something for smaller business. The conflict of basic philosophies about economics and sociology and politics is inevitable. Some feel salvation must come from a highly integrated economy in which Big Business or Big Government sets the pace. Others feel the inevitable change in the social organism of the whole world must be reflected in the fate of smaller business. And this welter of thought, which ranges from extreme radicalism to the stiffest kind of conservatism, finds its mean in the most widely prevailing idea that smaller business must be independent, utterly free of any tinge of either political, social, or economic collectivism. In essence that is what you might call the American Way. It is based on the original American philosophy of democracy, which most of us feel acutely, but find difficulty in putting in precise words.

How Many Small Businesses?

When you get away from the broadest fundamental issues involved, you find the chief trouble among those who wish to do something for smaller business is that they do not have a very clear idea of what should be done. You have often heard or seen the figure of 3,000,000 applied to the separate business establishments of the United States. The Small Business Committee of Paul Hoffman's Committee for Economic Development estimates there are approximately 1,000,000 self-employed individuals who work inde-

pendently with no employees. This group includes the small shop keeper, the man in the service trade, the physician, the lawyer, the writer, the engineer, the architect, and all those technical and professional and service workers who work "on their own." The CED estimates there are about 2,000,000 businesses which employ fewer than 100 workers each; and there are about 35,000 which employ between 100 and 1,000 people; and about 3,300 which employ more than 1,000. Incidentally, the CED special Small Business Committee reports since Pearl Harbor approximately 300,000 small business establishments have disappeared. It is assumed this figure covers those extinguished in addition to the normal annual disappearance of businesses in normal times.

All these agencies believe that smaller business needs help. It is crystal clear the war and the pressures of the huge integrations called monopolies have squeezed smaller business alarmingly. Frequently modern administrative and fiscal techniques have not been available to smaller business, and the difficulty of doing business without them is assumed to have seriously impaired the profitable function of smaller business. We are told it often is hard for smaller business to compete with larger business in distribution facilities, in buying, in securing materials, equipment, help, in obtaining all the facilities and services necessary to do business. We read that the colossal combinations are clumsy and frequently inefficient and ultimately wasteful and they can be oppressive and destructive. Bigness eliminates by the process of crowding out, and paralyzes by regimentation.

How Small Is Small Business

Incidentally, the question of size is another problem which bothers the friends of smaller business on the Hill and in other parts of Government. A business which was big 30 or 40 years ago, now is classified as small. Apparently one of the necessary services required from some of the many Government agencies working on smaller business problems is to provide the clarification which will define big, intermediate, and smaller business. One of the principal troubles now is that small business, really small business, does not benefit by any of the investigations, programs, and agencies supported by the taxes to which small business is the largest contributor. It has not been possible to obtain the figures which demonstrate strikingly that small business collectively pays the greater part of the bills for this Government, but we do learn from the report of the CED that 45% of total business employment roughly is provided by smaller business units which employ fewer than 100 workers each.

The Revitalized SWPC

Government attitude towards smaller business is best illustrated by Smaller War Plants Corporation, which, incidentally, Senator Murray plans shall become a permanent agency after the war. It seems significant that SWPC, in its present incarnation, holds its field of operation is limited to the 185,000 manufacturing plants in the lesser bracket. This reporter has a good friend in SWPC, a deputy director, who paints a picture of its present activities that would lead you to feel the agency has finally struck its gait, after many false starts. On the other hand, impartial observers, who know their Washington, think SWPC has become another WPA for some types of business. SWPC works with Government agencies to guide contracts, subcontracts, and subsubcontracts, to the smaller business firms which hitherto have not

had much opportunity to glean any of the largess floating around.

SWPC helps those firms which obtain the contracts to secure loans—which it underwrites—and it provides technical help, aids the firms in securing equipment, helps them to formulate bids for other contracts, helps them to get workers, and to secure restricted materials and services which are controlled by WPB and other Government agencies. As the deputy director puts it, "*SWPC is the small business man's friend at Court*" in Washington. It looks after the varied interests and needs of its clients. This reporter asked what SWPC might do for the businesses whose operators read the *AMERICAN ARTISAN*, and he was told the group whose activities centered on sheet metal were among the most difficult to assist. Either the explanation was not very clear, or the reporter could not clearly understand, but he never quite grasped why. Perhaps you may be able to get a sharper impression by making inquiries at any of the Regional SWPC offices, or at one of the 102 district offices scattered around the country so that at least one should be very near you.

Note this important fact—Under a regulation issued in 1943 SWPC does not aid small plants in Critical Labor Areas to obtain contracts. Presumably this is to force employees of such small plants to take jobs in most urgent war plants in these areas.

Won't Wetnurse Inefficiency

There is considerable emphasis on the point that SWPC is not designed to keep inefficient small business alive. We are told it has an entirely new way of providing advisory and technical services. It has simplified its methods of operation. Apparently, from the emphasis and repetition of the importance of the service, its chief present objective is to be the banker for some small business men. In effect, SWPC negotiates the loan and underwrites it with the bank. You make your application on SWPC Form 2. It is said to be a very simple 2-page questionnaire. The principal questions concern the number of employees you have, their draft status, their relative importance, what you pay them; and you are required to give an inventory of your facilities, and similar data. Loans up to \$25,000 are processed and made available in the field, by the local offices. They tell you these loans are negotiated with extraordinary celerity. Loans over \$25,000 must be processed in Washington, but have been passed and provided within four hours. The Board meets daily.

Maury Maverick is the head of SWPC. Maverick, of the family which gave its name to the ownerless cow, had a spectacular career with stormy trimmings, in Texas. He came to Washington with the original New Deal invasion, and went out of Congress when the invasion ebbed. He has been here since on one war Government payroll or another. He is generally regarded as an extremist, and as a showman. When the word filtered down that he would be appointed head of SWPC, Wright Patman, also a Texan, and head of the House Small Business Committee, gave notice in private the Maverick appointment would be made over Patman's dead body. Whatever the term may mean, it is illuminating to hear that some of his fellow Texans call him a screwball. The general impression here is that his appointment has political implications. His actions are expected to have political significance during the pre-election months.

Politics, unhappily, seem to have much to do with smaller business. The insistent and widespread inter-

(Continued on page 116)

Is Your Profit on Sales

A Good Profit on Capital Invested?

By Arthur Roberts

"I MADE 5 per cent net profit on sales in 1943 after paying myself a substantial salary for managing the business, so I guess you'll grant me a good rating on managerial efficiency," said Frank Reynolds, warm air heating and sheet metal contractor, as he showed his banker a profit and loss statement for the business done in 1943. Reynolds wanted a loan. Before granting the accommodation, the banker had asked for a financial statement or balance sheet. Reynolds had this document compiled by his bookkeeper, convinced that he would get the money because this statement looked rosy with a net worth of \$75,000. Oh, boy!

"Sorry, but we can't grant the loan," said the banker.

"How come?" asked Reynolds. "I think that 5 per cent net profit on sales, after paying taxes and a substantial withdrawal for myself, is an exceptionally fine showing."

Still the banker said, "No loan."

"But why?" persisted Reynolds. "My net profit on sales and net worth as shown by my statements should entitle me to bank credit."

"Each alone looks tops," explained the money man, "but when you pair them and compute, then the result is below par. You are not making your invested dollars work hard enough. Your balance sheet shows that your net worth, otherwise capital investment, is \$75,000. Your net profit for 1943 was \$2,500, so you are making only 3.3 per cent on capital invested. That is not an adequate return for your business and unless you raise the ante, you will find yourself in financial difficulties sooner or later."

Reynolds admitted that he had never thought about the profit on his investment before, only considered the profit on sales. There are many warm air heating and sheet metal contractors like Reynolds. They never give a thought to the profit on invested capital, just focus all their attention on profit on sales. Veterans who have built up to substantial volume over a period of years often suffer more from this deficiency than newcomers to this business because the former keep adding to net worth from year to year until it reaches a sizable sum and never check the profit on investment to determine whether their sales are maintaining sufficient headway to make the increasing net worth pay an increasing return proportionately.

That was the trouble with contractor Reynolds. He had been in business 20 years, made profits fairly consistently, and now his net worth had reached the tidy sum of \$75,000, according to his books, yet, his sales did not justify this capital investment. Of course, his net worth was not all in cash, never is, but it represented his original investment plus the profits he had left in the business these past 20 years. This \$75,000 should pay a satisfactory return the same as an investment in stocks or real estate.

From our field studies among warm air heating and sheet metal contractors, plus the information gleaned through our accounting commitments, we would say that, roughly, 85 per cent of the contractors in this industry never consider the return on capital investment, either because they do not understand it or never think about it in connection with their business. Because this emergency has magnified every business problem imaginable, far more so than ever before; because the war and post-war periods will intensify the demand for operating analyses from every possible angle, the contractor can no longer ignore the return on capital investment. He must maintain an adequate return—or else. He should know what constitutes an adequate return in order to be in a position to appraise intelligently, not only internal conditions but outside action toward restriction on capital investment below a fair return. Recently a

FRANK REYNOLDS

WARM AIR HEATING AND SHEET METAL CONTRACTOR

1943 Profit and loss statement

Sales	\$50,000
Cost of sales	30,000
Margin on sales	\$20,000
Overhead expenses	17,500
Net profit on 1943 sales (5%)	\$ 2,500

1943 Balance sheet

Assets

Cash on hand and in bank	\$ 5,100
Receivables	17,100
Inventories	10,000
Land and building	45,000
Showroom fixtures and shop equipment	5,000
Trucks	1,400
Other assets, investments, deferred insurance, etc.	5,700
Total assets	\$89,300

Liabilities

Accounts payable	\$ 4,300
Mortgage payable	10,000
Net worth	75,000
(\$2,500 is 5% net profit on \$50,000 sales but only 3.3% profit on capital invested)	
Total liabilities	\$89,300

government official suggested a ceiling of 6 per cent on capital investments, which may be ample in some cases and too low in others, depending upon the relationship of all operating elements. This paper is therefore presented to enlighten the contractor on capital investment so that he may utilize this important yardstick in checking managerial efficiency and in evading the hazards of this hectic time.

What Is Capital?

The word "capital," to most contractors, means money. It covers a wider territory. The contractor should know 4 types of capital: (1) working capital, the excess of current assets over current liabilities, (2) fixed capital, the money tied up in fixed assets, such as real property and fixtures, (3) borrowed capital, money borrowed from others, which in reality, isn't capital, but by such it is known and we follow through, (4) invested capital or capital investment, which means just what it says, the capital invested by the owner or owners in a business. As time goes on, the original investment is augmented with profits made each year and losses deducted, the remainder being the net worth or current capital investment. On the balance sheet, the net worth of a non-corporate business is the difference between the assets and the liabilities. The net worth of a corporation is the capital stock plus the surplus. If you keep losing money so that you under-cut the credits to your net worth, you will have a deficit and this is a big hazard in times like these unless an eagle-eye is kept on the return on capital investment. It is contended that a deficit on a balance sheet doesn't always indicate insolvency, that one is insolvent only when he can't meet his obligations, nevertheless, it is unwise to try to get credit from a banker with a balance sheet that shows a deficit.

The profits on investment should be checked periodically, the same as the profits on sales and the ratio of working capital. In Reynolds' case, such a check-over would have disclosed that, although profits on sales were passable, the profits on investment were too low because the net worth exceeded annual sales by 50 per cent. It is safer to have the ratio bear the other way. The ratio of sales to net worth varies in different fields, and in the same field, there is considerable variation, just as costs, overhead expense and margins vary in different establishments, the competent business managers always earning top incomes.

There is no set ratio of sales to net worth but from our field studies, we would say that if the proportion in this field does not approximate $1\frac{1}{2}$ of sales to 1 of net worth as a minimum ratio, it is advisable to start checking the business machinery for flaws in operation. Also notice that Reynolds lists no reserves on the balance sheet, which means that he charges off no depreciation, thereby inflating net worth and yearly profits. This inflation prevents Reynolds from appraising his profit on capital investment with any degree of accuracy. Moreover, it indicates that he does not include depreciation expense and other legitimate allowances for contingencies, such as bad debt losses, in his costs, hence, his installations are figured too low for adequate profit, which is one reason why the profit on investment is below average.

Another thing to watch when checking the profit on investment is the ratio of net worth to fixed assets; namely, business property, tools, fixtures, etc. If this ratio approximates 1 to 1, it indicates undue expansion, too much money invested in fixed assets with

resulting high upkeep and low working capital. Too much money invested in fixed assets is a continual drain on working capital. When the net worth approximates the fixed assets, the owner is supplying capital for none of the current assets, in other words, no liquid working capital. The reason why it is necessary to watch this ratio is that the owner of a business should supply the capital for the fixed assets plus at least 25 per cent of the current assets. Circumstances may alter cases and conclusions when this ratio is checked, nevertheless, it is conceded hazardous when the net worth approximate the total of fixed assets and the wise contractor in these days will make periodical comparisons to find out where he stands on this ratio because it is one indicator of that dreaded over-expansion, which has proven so costly after other booms have gone their way.

Interest Is Not Overhead

Some contractors charge interest on investment as an internal expense, handling it similar to depreciation, so that this expense is included in overhead and the customers pay it. Whether or not to make this charge is a moot question. Some contend that capital invested in a business should pay interest, that if an owner took his share of yearly profits out of a business, he would have to replace it, as needed, with borrowed capital bearing interest, hence, he is entitled to equal consideration. Dissenters state that borrowed capital receives interest, nothing else. It does not get a profit on the business resulting from the borrowed money invested. The owner does, hence, should not expect additional interest on his investment. Mechanically, from a bookkeeping standpoint, the charge goes into overhead expense and the offsetting credit to profit and loss, so one entry offsets the other, but in setting selling prices, this interest is included in the overhead expense by some contractors, the customers pay it and sales are that much more profitable. At any rate, if you charge interest on capital invested, deduct it after you have computed the net profit, the same as Federal taxes so that it is not figured with other overhead expense.

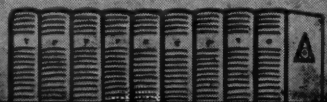
What To Do

If the profit on invested capital is too low, under 5 per cent in this field, according to our experience, it may be that:

- 1—You are not figuring adequate margin.
- 2—You are over-capitalized—investment is too high for the volume transacted.
- 3—The credits to reserve accounts are too low or no reserves have been opened at all.
- 4—The ratio of net worth to fixed assets is inadequate.
- 5—Borrowed capital is too high.
- 6—You are not doing an efficient merchandising job.
- 7—Your equipment is obsolete or in other ways inadequate.
- 8—The experience costs upon which you base your estimates on installations are incorrect.

Any one or a combination of the foregoing factors will have a bearing on the profit on capital investment. If this return is below par, start searching for the cause in the places just designated. One thing is certain. The higher the return on capital invested, the more efficient the management. A low profit on net worth or capital investment indicates inefficient management, probably more so than any other element in the operation of a warm air and sheet metal contractor's business.

History of the



NATIONAL WARM AIR HEATING and AIR CONDITIONING ASSOCIATION

By ... ALLEN W. WILLIAMS

CHAPTER 14

Conclusion — 1914-1940

1940 opened with the Association's January convention being held in Cleveland, Ohio.

The Sixth International Exposition of Heating and Air Conditioning was held at the time in that city with the display by far the largest and best the industry had ever seen.

Then, for the third time, another splendid joint session with the American Society of Heating and Ventilating Engineers was an attractive and helpful event with an attendance taxing the capacity of the large meeting room provided for the occasion.

For the first time in the history of the furnace industry "outsiders" were telling the membership they were selling a de luxe product. The industry may have realized that was a fact, but it was encouraging to

have some one other than the manufacturers of the goods referred to tell them the pleasing news.

Olsen Elected President

Two years having passed since the induction of President Taylor into office, he was succeeded in January, 1940 by C. A. Olsen, president of the Olsen Manufacturing Company, Elyria, Ohio.

Gravity Furnaces Not Overlooked

So much study and attention had been given to mechanical furnace heating that at times there were suggestions to the effect that the gravity furnace might be overlooked. It was thought well to check the matter up a bit to make sure.

A. F. Frazee, well known member of the Association was assigned that task and his report, given the middle of 1940, included much interesting data which indicated that the gravity furnace would always be in good demand.

Among other things his study developed that out of 450,000 furnace units sold in 1939 70% were gravity and 30% were of the blower type. The Industry's figures for 1940 were indicated as 65% gravity furnaces sold and 35% of the mechanical type.

Mr. Frazee also pointed out that the trend of new



Clarence A. Olsen—President, National Warm Air Heating & Air Conditioning Ass'n 1940-1942.



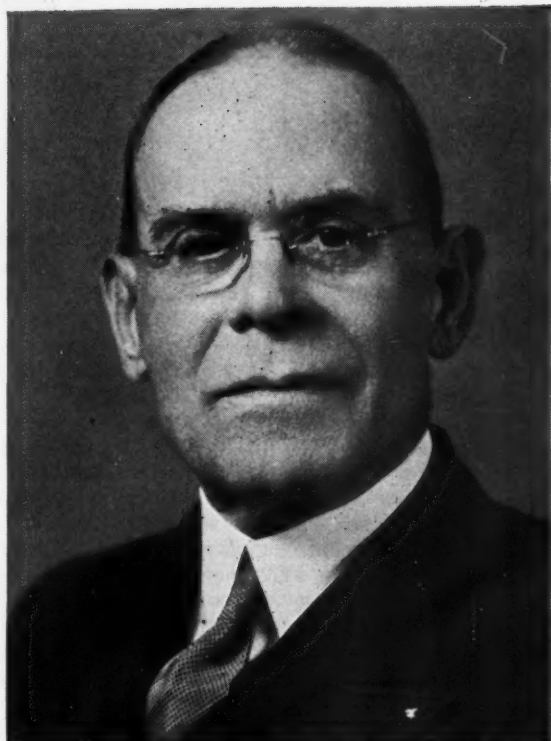
George Boeddener—Appointed association's Managing Director 1940.

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Allen W. Williams—author of this history and association's Managing Director and Treasurer from 1914 to 1940, retired July 1, 1940.

homes was rapidly dropping into smaller ones in lower cost range, and this would undoubtedly support a continued demand for gravity installations. All in all, it appeared that if the use of gravity furnaces slipped it would not be to any great extent.

"Yardstick"

The new well known "Yardstick" of the Association was conceived in 1940. Its preparation was under the capable direction of Professor Konzo. The first part of this book, the full title of which is "A Yardstick for the Evaluation of Forced Air Heating," was given over to advice for the home owner as to what he can best afford to buy in the way of mechanical furnace equipment. It also told him what constitutes a good forced air system, what specification he can

demand for the first class installation and what he may reasonably expect from other grades of such plants and installations.

Boeddener Joins Association

Early in 1940 George Boeddener had been appointed Assistant to the President. He enjoyed a wide acquaintance and was thoroughly familiar with the industry. His duties at first were the contacting of the membership of the Association and dealers and jobbers of furnaces and their appurtenances; to assist the Publicity and Merchandising Committee; to attend and speak at many of the industry's sales meetings and other meetings where it was possible to promote the popularity of the furnace system and the best interests of the Association. He was able to add many desirable members to the Association's roll, and proved a most helpful addition to the Association's staff in many ways.

Allen W. Williams Retires

Shortly after the Association's mid-year meeting in 1940, Allen W. Williams, who had served as the organization's Managing Director and Treasurer for over twenty-five years, asked to be retired on July 1, 1940. He was succeeded by George Boeddener.

The year 1940 closed with the National Warm Air Heating and Air Conditioning Association established as the accepted leader of the entire furnace industry with every prospect for its continued success. What in 1914 was little more than something hoped for had become a splendid reality.

So, this story of a very worth while cooperation that has not only been profitable to a great industry, but has made additional comfort, health, economy and safety possible in the American home is—to be continued.

Author's Note: If this serious chronicle of the National Warm Air Heating and Air Conditioning Association has given the impression that its membership has always been pretty much long faced monks, this note is added to the effect that the organization's traditional banquets, sporty golf tournaments and many amusing entertainments have always been famous for their uniqueness and for the fellowship which they have developed. The story of those events would alone fill a book.

300,000 FHA Repairs in 1943

MORE than 300,000 American families financed essential home repair and maintenance work last year with Title I funds advanced by private financial institutions and insured by the Federal Housing Administration.

Loans reported for insurance under Title I of the National Housing Act last year numbered 308,167 and amounted to \$96,374,462. Of the total number, 85.3 percent were for repair or maintenance of single-family dwellings, 8.5 percent for two or more family dwellings, 3.7 percent for farm homes and buildings, 2.5 percent for commercial, industrial, or other types of structures.

Of all Title I loans reported for insurance last year 97.5 percent were for repair or maintenance of resi-

dential properties. In 1942 Title I loans for these purposes amounted to 93.4 percent.

All types of industry in the housing field shared in the proceeds of Title I loans last year, but in varying degrees and with several changes in ratios due largely to wartime restrictions. The major purpose of the loans for 29.8 percent of the total amount reported last year was for exterior painting, compared with 22.6 percent in 1942; 16.9 percent was for roofing, compared with 11.0 percent in 1942; 13.1 percent was for heating and plumbing, compared with 20.1 percent in 1942; 6.8 percent was for interior finish, compared with 7.8 percent in 1942; and 21.5 percent was for miscellaneous types of work, compared with 10.4 percent in 1942.

Interpretations, Amendments, Easements To Existing Orders

1319 Processed Locally

EFFECTIVE now, Regional Offices of the War Production Board have been instructed to process and approve ALL 1319 applications for Class A stokers *where the consumption is 25 tons or more annually*. No further screening is necessary. These applications are to be approved, irrespective of the type of building or heater in which the stoker is installed. There is no other requirement than the consumption of coal should be 25 tons or more annually. Such applications should automatically be approved.

Reports of denials of these applications by certain local offices based on "essentiality to the war effort" have created some confusion and misunderstandings, but probably most of this difficulty has been caused by the change over to the new form and the apparent conflicting instruments used by local processors.

The WPB Regional Offices are notifying all local offices of this ruling. This should clarify any misunderstanding on the part of anyone as to the specific need for the installation of Class A stokers in the present heaters using 25 tons or more of critical hand-fired coal sizes annually.

1319 Applications for Stock

WPB Regional and Local offices have now been authorized to process and approve 1319 applications from dealers and distributors for stocks of Class A stokers.

L-75 Amended

A SHORT time ago L-75 was amended by WPB. It was stated that the amendment was made for the purpose of simplifying restrictions controlling distribution of Class A stokers.

Sales of Class A stokers to fill orders for the Army and Navy and for approved installation in projects authorized by preference ratings regularly assigned to war housing and other construction projects may now be made without specific authorization from WPB.

All other sales must still be authorized on Form WPB-1319, and applications for such authorization must be filed with the appropriate WPB field office.

Approval on Form WPB-1319 will also constitute authority to begin construction if the total cost—stoker plus installation—is no more than \$5,000. If the total cost exceeds \$5,000, however, applicants should apply for authorization to purchase and install a Class A stoker on regular construction application forms GA-1456 or WPB-2896. Previously every purchaser of Class A stokers had to obtain special authorization from WPB before purchase could be made.

The amended order also specifies that any appeals from the provisions of the order should be filed on Form WPB-1477 (formerly PD-500) with WPB field offices.

The amendment does not make any changes concern-

ing the manufacture and sale of Class B stokers. The manufacture of Class B stokers is still prohibited.

Local WPB field offices are being instructed to process applications from dealers and distributors for inventory of Class A stokers.

The instructions (issued several weeks ago) to the WPB field offices on the processing of Form WPB-1319 contain the notation that three copies of the form should be filed with WPB in Washington by dealers and distributors for Class A stoker inventory. Until these instructions are amended and in line with the above paragraph, and in order to avoid delay in the processing and shipment of stokers for stock and until such time as WPB field offices are in possession of the amended instructions on this point, dealers and distributors should continue to file their inventory applications with Washington as they always have. Washington will act promptly and return the applications, either approved or rejected, in a reasonable period of time.

Vaporizing Burners Released

POT type oil burners, the kind usually used in water heaters, floor furnaces and other small appliances, may now be purchased by consumers without a preference rating, the War Production Board announced April 21. However, in the case of new installations, authorization for delivery of fuel oil still must be obtained from the Petroleum Administrator for War before purchase can be made.

Former restrictions of the Oil Burner Order L-74, required a preference rating of AA-5 or better for purchase of Class C, pot type, oil burners. Since pot type burners consume little oil, they are used mainly in small appliances and WPB considered it desirable to make such burners available to consumers—especially for replacement purposes.

Following are the changes:

PART 3288—PLUMBING AND HEATING EQUIPMENT
[General Limitation Order L-74, as Amended

Apr. 20, 1944]

OIL BURNERS

(2) "Class A oil burner" means any oil burner which is designed by the producer or approved by the Underwriters Laboratory to burn No. 5, No. 6 or heavier fuel oil, or which regardless of what grade fuel oil it burns, is designed or manufactured specifically for shipboard use or for heat processing. *An oil burner will be considered as designed or manufactured specifically for heat processing if it is produced for use in connection with devices intended for the application of heat for purposes other than for space heating or hot water supply systems. Heat processing will, therefore, include, but is not limited to rendering sea water drinkable, melting tar or asphalt for road or roof use, dehydrating milk, sterilizing, and the like.*

(1) *Replacement.* A dealer may deliver any Class A oil burner from his stock installation as a replacement, and the installation may be made, if the owner of the premises has applied for and obtained the approval

(Continued on page 102)

On Our Industry's Front

Contractors to Furnish Furnaces

CONTRACTORS on publicly-financed war housing projects will furnish in the future items of equipment heretofore handled through mass purchase by the Federal Public Housing Authority.

Such items as plumbing and heating equipment will be included in construction contracts again as they are under normal building conditions.

"Mass purchasing was resorted to as a temporary war measure early in 1942, when shortages of critical materials and necessary limitations on manufacture threatened to impede production of essential war housing," says FPFA. "This centralized buying, arranged in cooperation with the WPB, initiated the first Victory models of housing equipment, stripped down in design to conserve critical materials. By placing mass orders, we enabled manufacturers to open production lines which yielded sufficient quantities to serve war housing as well as other military and civilian war needs."

All equipment still is limited to Victory models but manufacturers have been able to build up their inventories to allow distribution to be resumed through regular merchandising channels.

The FPFA has a stockpile of equipment which will be sufficient for the next three months' housing demands. In the meantime, FPFA, has begun liquidation of the central buying activities through which more than \$80,000,000 of equipment has been purchased for approximately a billion dollars of war housing. Fully three-quarters of this total amount was furnished FPFA by small manufacturing concerns throughout the country.

War Housing Nearly Done

WITH 90 percent of its scheduled war housing completed, the Federal Public Housing Authority now is concentrating on construction in a comparatively few critical areas and a management job without precedent.

More than 650,000 publicly-financed war housing units have been completed, 68,969 are under construction and 37,039 are in pre-construction and planning stages, according to the report. Future construction schedules will be determined by surveys now being made by the National Housing Agency, of which the FPFA is an operating unit.

The real problem from now on will be the task of supervising the management of projects which ultimately will shelter 2,000,000 persons.

Registers Are Short

REGISTERS and cold air faces for warm air heating systems are in short supply according to the newly organized Warm Air Register and Grille Industry Advisory Committee, the War Production Board announces.

The Committee agreed that a limitation order was needed to provide for production of registers and faces on the basis of stated requirements from claimant

agencies. A proposed order basing production on a percentage of a base year's production was discussed by the Committee.

Under the present production set-up, no requirements are established. Production of registers for warm air heating systems is permitted under the Iron and Steel Order, M-126, but only Bessemer or top cut steel can be used and production is confined to labor areas 3 and 4.

Cold air face production is prohibited under Order M-126 except for those made for use on shipboard.

The prohibition on the manufacture of faces has meant that in some instances registers are being installed where faces, which use less metal, would suffice, committee members said.

Materials for Rebuild

THE procedure under which repairmen purchase controlled materials, other materials, parts, and sub-assemblies, has been amended by WPB to indicate that they may use it to obtain materials with which to recondition or rebuild damaged or used items for resale. CMP regulation No. 9A, amended April 15, redefines the term "repairmen" to include persons who recondition or rebuild damaged or used items for resale.

L-41 Revision

THE War Production Board has announced a minor revision of Order L-41, the overall order limiting construction, to make it conform with other recently amended WPB orders also concerned with construction.

Only one substantive change is of interest to our industry:

(1) The exception previously given to the installation of plumbing and heating equipment rated on WPB form 2631 (formerly PD-851) is revoked. Hereafter, WPB permission under Order L-41 will be necessary on all plumbing and heating installations where the cost of the construction including the cost of the equipment is in excess of the L-41 cost limits. Applications for this type of construction must be made on WPB form 2896.

Other revisions merely clarify or reflect recent changes in procedures.

105,000 Mechanics Needed Postwar

WILLIAM F. PATTERSON, director of apprentice training for the War Manpower Commission, predicted that at least 105,700 skilled workers would be needed annually for postwar industry. Peacetime industry, to keep abreast of wartime inventions, will require 618,300 apprentices in training constantly, adding them at the rate of 220,000 a year, Mr. Patterson told a meeting of the National Electrical Contractors Association. Ample opportunity should be given returning war veterans to learn a trade as an apprentice in a private industry, he said.

NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION



Says

Come To The Summer Meeting — June 7 and 8

THE program of the National Warm Air Heating and Air Conditioning Association's mid-year meeting to be held at the Stevens Hotel on June 7th and 8th has been arranged to present to manufacturers, jobbers and dealers information which will be of great value in making future manufacturing, sales and marketing plans.

A large number of very able speakers on various subjects are included in the two-day program. In addition to the following who will appear, there are several whose names cannot at this time be announced because arrangements have not yet been completed.

H. P. Mueller, President, National Warm Air Heating and Air Conditioning Association, will talk on the "Future of the Warm Air Heating Industry."

C. E. Lewis, President of Oil Heating Institute and General Manager of the Delco Heating Division, will speak on the subject of "The Future Oil Supply."

Arthur L. Scaife, Merchandise Manager, Appliance Sales Division of General Electric, has for his subject "Planning the Sales Program."

"What Are the Gas Utilities' Plans for Home Heating in the Post-War Era" is the subject to be presented by E. B. Voneman, Merchandising Manager, Montana-Dakota Utilities Company.

"Practical Warm Air Heating" is the title of the new warm air textbook which is now being prepared. Professor Konzo will discuss briefly the first five chapters which have been completed and will also present in finished form the new Forced Warm Air Manual.

Dr. Ralph Sherman of Batelle Memorial Institute has for his subject "Fuel Resources of the Nation."

Professor A. P. Kratz of the University of Illinois will present the results of the research test in the Warm Air Research Residence in connection with the principles of operation of a "Smokeless Coal Furnace."

Henry Norris and Morgan N. Johnston of the Plumbing and Heating Division of the War Production Board will arrive in Chicago on June 6th, the day before our meeting on June 7th and 8th, to answer any problems which manufacturers, jobbers and dealers may wish to present. Also on June 8th Mr. Johnston will briefly outline on our program the thinking of government with reference to the warm air heating industry.

"Better Accounting Methods" in the warm air heating industry is the subject to be presented by I. L. Jones, President of International Heater Company and Chairman of the Furnace Advisory Committee to the Office of Price Administration.

The Office of Price Administration will be represented by Orrin S. McCarrison, Acting Head, Mechanical Building Equipment Section, who will discuss "Price Stabilization" as it affects all branches of the warm air heating industry.

Frank Juraschek, Manager, Commercial Research of the Carnegie-Illinois Steel Corporation, will have a message of very great interest to members of the Warm Air Heating Industry.

James R. Scott, Chairman of the Publicity and Merchandising Committee, will not be officially listed on the program. However, he will if approval is given by the Executive Board, present the outline of a program now being developed by his committee. This program will prove to be the biggest undertaking to reach consumers by the warm air heating industry in its entire history. Its success has already been assured through a test survey. Like the four motors on a Flying Fortress, it includes manufacturers, jobbers, distributors and dealers, all working together to increase and broaden consumer acceptance of warm air heating. Never before has there been such an opportunity in the industry to assure for itself substantial markets beyond anything previously conceived, in the coming years.

It has been many years since the National Warm Air Heating and Air Conditioning Association has at its annual conventions and mid-year meetings planned such an all inclusive program for dealers, distributors, jobbers and manufacturers. June 7th and 8th is the time and the Stevens Hotel, Chicago, is the place to get the temperature and pulse readings of the warm air heating industry. Everyone will need an "injection" to build them up, to plan for developments of "tomorrow."

DO THREE THINGS NOW

1. Plan to attend!
2. Make your hotel reservation.
3. Make train reservations as soon as you can.

All Committee and Board of Directors meetings will be held on Tuesday, June 6th.

AMERICAN ARTISAN




RESIDENTIAL AIR CONDITIONING

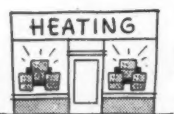
S E C T I O N





DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

A plan for extra Spring and Summer profits

 The 1944 Spring Promotion really helps  step up 

your business.  It makes a hot prospect out of every owner

of a forced-warm-air furnace in your community. Here's the idea:

 Right now is house-cleaning  time. And one of the

most logical places to start 

this job is with the furnace. It's

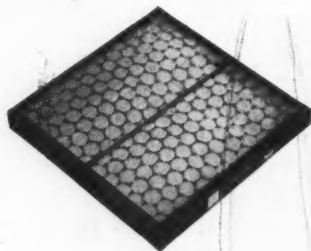
dollars to doughnuts,  fur-

nace filters  are now clogged

with dust and grime . . . and that's

where you come in  with brand-

new Dust-Stops.*



FIBERGLAS* DUSTOP AIR FILTERS

*T. M. Reg. U.S. Pat. Off.

Free 1944 Spring Promotion Heads Business Your Way

DUST-STOPS offer you the biggest and best dealer helps in the filter business.

Your Spring Promotion includes free attractive window and counter displays . . . colorful envelope stuffers and mailing cards imprinted with your name and address . . . newspaper ads in complete mat form . . . radio spot announcement scripts . . . furnace labels. Also a free catalogue of filter sizes to enable you to fill orders quickly over the phone or counter.

And Remember This—

Dust-Stops are no strangers to many of your customers. The advantages of changing Dust-Stops regularly are told to more than 12,000,000 people—all during the heating season—through the pages of *Life*, *Saturday Evening Post*, *House Beautiful*, *Better Homes and Gardens*, and *American Home*.

Putting it Briefly—

The business is there . . . the profits are good. So, if you are not already handling Dust-Stops, why not write for the 1944 Spring Promotion to your nearest Dust-Stop supplier TODAY? *Owens-Corning Fiberglas Corporation, Toledo 1, Ohio. Fiberglas Canada, Ltd., Oshawa, Ontario.*



Increasing Efficiency of the Heating Plant

This article is one section of Bulletin No. 20 "Conservation of Fuel" issued by the Engineering Experiment Station, University of Minnesota. The bulletin covers the entire field of fuel conservation measures and may be obtained from the university. With even wider emphasis on conservation coming next winter, a file of such data will be valuable to every contractor.

THERE are a great many heating installations which are wasting fuel through either improper installation and adjustment or improper operation. This is especially true of automatically fired installations originally designed to burn coal and later converted to oil or gas by the removal of the grates and the installation of an oil or gas burner. It is, of course, impossible to utilize all of the heat contained in the fuel for heating purposes, as there must, of necessity, be some waste in the gases discharged from the chimney. These losses, however, should not amount to more than 30 per cent of the heat in the case of oil or gas and not more than 40 per cent in the case of stoker-fired coal; yet it is not uncommon to find these losses appreciably higher than these figures. Such losses can often be reduced by having a competent serviceman check and adjust the plant. Some of the more important factors which should be investigated in considering possible methods of increasing the efficiency of an automatically fired heating plant are as follows:

Fuel Input

Theoretically the amount of fuel burned in the furnace should be just sufficient to supply all of the heat required to maintain temperature in the structure, plus any unavoidable waste heat losses from the heating plant. As practically all oil and gas burners are designed to burn fuel at the same rate, regardless of the outdoor temperatures and the heating requirements, such installations run practically continuously in the coldest weather and operate with decreasing frequency as the weather becomes milder and the heating requirements are not as great. The most practical adjustment of input for proper operation is to supply the fuel at a somewhat greater rate than that required theoretically. If this is not done, it will be found that when the thermostat is turned back to a lower temperature for a few hours, it will take too long a period of time to again warm the structure to its original temperature upon resetting the thermostat. There are, however, countless burners which have been adjusted to supply the fuel at a much greater rate than is necessary or desirable from an economical standpoint. The amount of heating surface available in the heating unit for the purpose of extracting the heat from the flame and hot combustion gases is the same regardless of how the fuel input is adjusted. Therefore, if this fuel input can be kept as low as practical, there will be less likelihood of overloading the heating surfaces of the plant and this, in turn, will result in a reduction of the waste heat loss to the chimney by excessive stack gas temperatures. However, in any case care should be taken that the fuel input is not so low as to cause an excessively low

stack temperature resulting in the condensation of moisture from the stack gases on to the flue and stack surfaces. The advisability of changing the rate of fuel input in a heating plant should be left to the judgment of a competent serviceman.

Flue Gas Analysis

The correct combustion of fuel requires that a definite amount of air be supplied and properly mixed with the fuel during the burning processes. If too little air is supplied, the fuel will be incompletely burned and this results in a loss of some of the available heat. If too much air is supplied, the excess air will pass through the heating plant, will be heated to the temperature of the chimney gases and discharged as waste heat from the chimney. In either case the losses may be considerable, and correct adjustment of the plant with a consequent reduction of this loss can be carried out properly only by analyzing samples taken of the flue gases.

Such an analysis is accomplished by means of an Orsat apparatus which, among other things, enables determinations to be made of the amount of carbon dioxide (CO_2) contained in these flue gases. In the case of fuel oil, if just a sufficient amount of air is supplied to burn the oil, about 15 per cent of the volume of the flue gases consists of carbon dioxide. In the case of the average stoker-fired coal, the percentage carbon dioxide is approximately 17 per cent, and in the case of a mixture of natural and manufactured gas such as used in the city of Minneapolis, the percentage carbon dioxide is approximately 12.6 per cent.

If some excess air is supplied to the combustion chamber, this will dilute the carbon dioxide of the flue gases and the Orsat analysis will show a correspondingly lower percentage of carbon dioxide. If too little air is supplied to the combustion chamber, the fuel oil will not be completely burned and again an Orsat analysis will indicate this, along with showing a reduction in the percentage of carbon dioxide. Because in practice it is difficult to get a complete and proper mixing of the air with the fuel, it is usually necessary to operate with 25 to 60 per cent more air in the case of oil and gas and somewhat higher in the case of stoker-fired coal than that required theoretically for perfect combustion. Under these conditions of operation, an Orsat analysis will show the flue gases to contain 8 to 12 per cent carbon dioxide in the case of fuel oil and 7.5 to 10 per cent in the case of gas. In the case of stoker-fired coal and hand-fired coal, an Orsat analysis will vary continuously because of the variations in conditions under which the coal is burning.

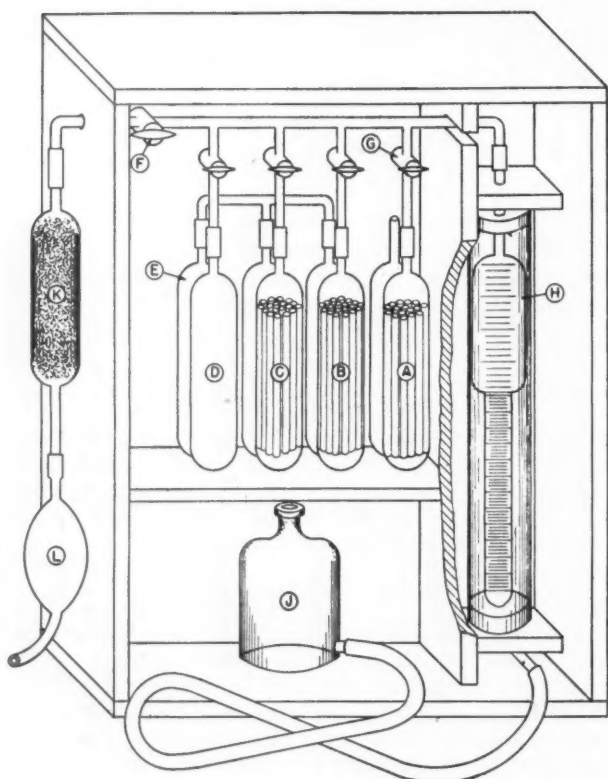


Fig. 12. Diagrammatic view of Orsat apparatus for analysis of flue gases.

A complete Orsat apparatus is shown in Figure 12. In its operation the sample of gas to be analyzed is first drawn into chamber H where its volume is measured and from there pumped successively into the absorption pipettes A, B and C. The solutions in these, in turn, absorb the carbon dioxide (CO_2), the oxygen (O_2), and the carbon monoxide (CO), respectively. Between each absorption the remaining gases are returned to chamber H where their volume is measured and the percentage of the gas absorbed in the pipette determined. The first pipette contains potassium or sodium hydroxide for the absorption of carbon dioxide; the second pipette, potassium pyrogallate for the absorption of oxygen, and the third pipette cuprous chloride for the absorption of carbon monoxide. In this way the three principal constituents of the flue gases, which it is necessary to know in order to analyze the heat losses up the stack, are determined. Pipette D, shown in the drawing, is a water seal, while J indicates the water leveling bottle, L a rubber bulb pump, K a filter, and F and G valves.

There are several simplified methods on the market for determining the percentage carbon dioxide in the stack gases and which exclude the measurement of the oxygen and carbon monoxide. Since the most important constituent of the flue gases from the standpoint of determining heat losses is carbon dioxide, such equipment is usually satisfactory for most practical work.

Figure 13 shows the percentage of the available heat contained in fuel oil which is lost to the flue gases under different conditions of stack temperature and carbon dioxide content. For example if an Orsat analysis shows 10 per cent carbon dioxide and the stack temperature is 600°F ., then approximately 22 per cent of the available heat is being lost in the flue

gases. However, if the carbon dioxide is only 4 per cent and the stack temperature is still 600°F ., these losses will amount to 42 per cent. Further examination of these curves shows that the flue gas losses increase both as the percentage of carbon dioxide in the flue gases decreases and as the stack temperature increases.

Figures 14 and 15 show similar relationships between flue gas heat losses, percentage carbon dioxide in flue gases, and stack temperature for the mixture of manufactured and natural gas used in Minneapolis and for coal for stoker use.

All automatically fired heating installations should be given a periodic checkup in order to make certain that the plant is in proper adjustment. Such adjustments should be done by a competent, properly equipped serviceman. It should be realized that, regardless of the amount of a person's experience in heating plants, it is very difficult to get a plant in proper adjustment without the aid of some form of flue gas analyzer.

Automatic Draft Regulators

An automatic draft regulator is any device which will automatically maintain constant draft at the heating plant regardless of the outside atmospheric conditions. Such devices are attached to the stack and either automatically adjust a damper located in the stack or operate to admit a varying amount of room air to the stack as the chimney draft varies. It is thus possible to have the same amount of air passing through the combustion chamber at all times during operation of the heating plant regardless of the outside wind velocity and other atmospheric conditions. Such a device is usually necessary for the efficient operation of an oil-fired or a stoker-fired heating plant, since without draft control, a burner adjusted for the best efficiency under one condition of chimney draft may not give good efficiency when the draft is altered by change of weather conditions. With gas-fired heating equipment it is usually required that a downdraft diverter be located in the stack. This equipment serves the double purpose of maintaining a constant flow of air through the combustion chamber

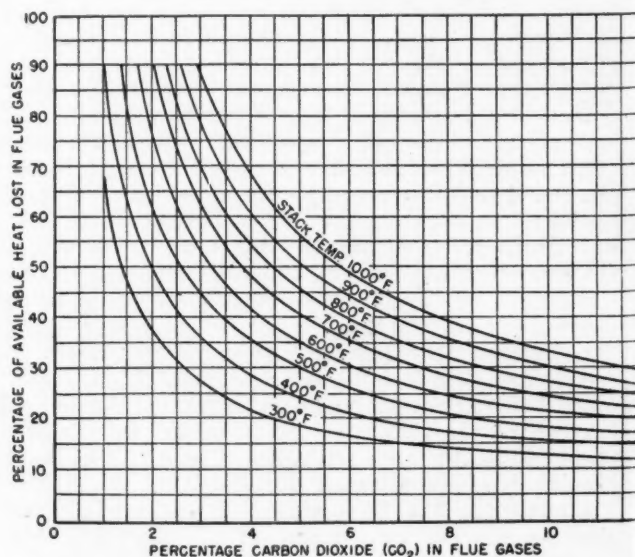


FIGURE 13. PERCENTAGES OF AVAILABLE HEAT IN FUEL OIL LOST TO FLUE GASES FOR VARIOUS STACK TEMPERATURES AND PERCENTAGES CARBON DIOXIDE

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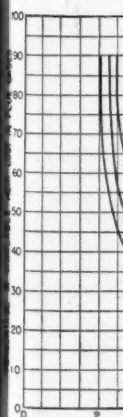


FIGURE 15. PERCENTAGES OF AVAILABLE HEAT IN FUEL OIL LOST TO FLUE GASES FOR VARIOUS STACK TEMPERATURES AND PERCENTAGES CARBON DIOXIDE

and also of preventing any back drafts down the chimney from blowing out the gas flames.

With draft diverters and the types of draft regulators which operate to admit a varying amount of room air to the stack with variations in chimney draft, there is some loss of heat because of the warmed room air discharged from the stack. However, this additional loss is more than compensated for by the gains in operating efficiency through the use of such equipment. Draft regulators which automatically adjust the damper located in the stack and do not admit room air to the stack have the additional advantage of eliminating this source of heat waste. Satisfactory automatic draft regulators can be purchased through and installed by any reputable dealer in heating supplies and equipment.

Fuel Savers

Many devices have been designed for installation in the stack between the boiler and the chimney for the purpose of recovering some of the heat normally wasted in the flue gases. Such devices are usually termed "fuel savers" and are designed so as to permit recovery of some of the heat in the flue gases by transferring it to either circulating air or water. The heat recovered in this manner may then be utilized either through the installation of an additional radiator or register, the heating of basement areas, or for the heating of domestic hot water. Fuel savers of this type should be used only in those cases where the stack temperatures are abnormally high and where there is sufficient chimney draft to handle the additional resistance to the flow of stack gases imposed by such a device. Essentially, a device of this type consists of additional heating surface, and its use is warranted only in those cases where high stack temperatures are the result of lack of heating surface and not due to improper installation or adjustment of the burner. In systems sized and designed for automatic fuel burning the amount of heating surface is usually great enough so that such auxiliary devices are neither warranted nor advisable. However, in some systems originally designed for coal firing and later converted to oil or gas, it may be found that the amount of heating surface of the plant is insufficient for economical operation and, therefore, the use of such a fuel saver may be advisable. In any case it should be realized that such a device should not lower the stack temperature below approximately 350° F. as there then may result some condensation of the moisture contained in the

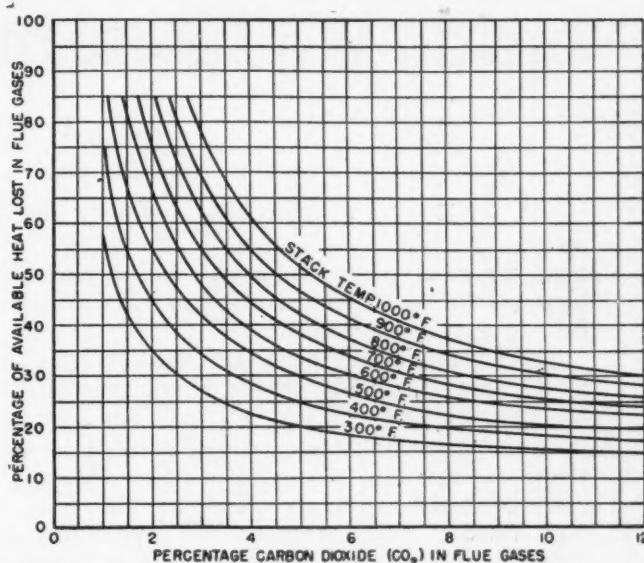


FIGURE 14. PERCENTAGES OF AVAILABLE HEAT IN MINNEAPOLIS CITY GAS LOST TO FLUE GASES FOR VARIOUS STACK TEMPERATURES AND PERCENTAGES CARBON DIOXIDE

flue gases on the chimney and stack walls, thereby causing harm to the chimney and to the heating system.

Insulation of Piping, Heating Units

Where it has not already been done, it is sometimes possible to effect fuel economies in heating systems by the insulation of the piping or the heating unit itself. In general, there is a waste of fuel where pipes and ducts conveying heat run through unheated spaces. The greater the difference in temperature between the heating medium and the cold space through which the pipes and ducts are run or in which the heating unit is located, the greater will be the waste of fuel from this source. All piping on hot water heating systems and all of the steam supply piping on steam heating systems should be insulated unless the system has been designed to use the uncovered pipe as actual heating surface. With gravity warm air and with forced air heating systems, it is advisable to insulate all of the supply pipes and ducts which pass through very cold areas or through outside walls. It is not general practice to insulate such ducts and pipes merely passing through basement areas because of the large amount of insulation which would be required. However, it should be realized that heat loss to the basement area is not entirely wasted as it tends to warm the floors above and to reduce heat losses from the first floor into the basement. The advisability of the further use of insulation on ducts, pipes, or the heating unit itself should be left to the judgment of a reputable heating contractor.

Cleaning of Boilers and Furnaces

For greatest operating efficiency any deposits of soot on the flue surfaces or heating surfaces of a boiler or furnace should be removed periodically. Such soot deposits may become heavy enough to reduce the rate of heat transmission to the heating surfaces enough so that the over-all efficiency of the heating plant is reduced as much as 6 per cent. If, in addition, there are any heavy deposits of soot in the smoke pipe connection between the furnace or boiler and the chimney,

(Continued on page 93)

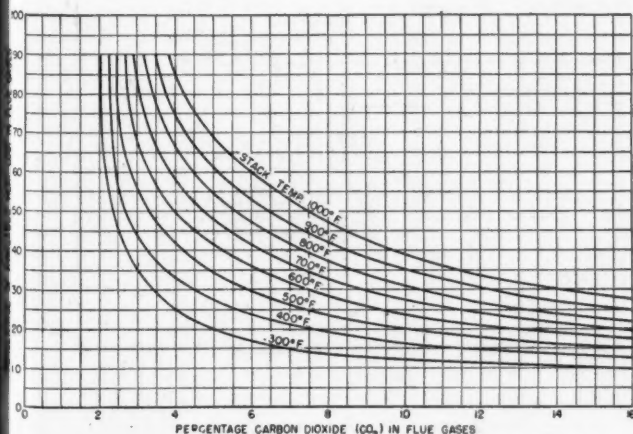


FIGURE 15. PERCENTAGES OF AVAILABLE HEAT IN STOKER COAL LOST TO FLUE GASES FOR VARIOUS STACK TEMPERATURES AND PERCENTAGES CARBON DIOXIDE

Inside Wall Returns Work in All Houses

By William Ayers

ONE of the questions currently under active discussion is—"Can we eliminate long return air runs from grilles at outside walls by placing returns on inside walls and will this sacrifice some comfort conditions?"

The discussion has been stimulated, of course, by the present trend to houses without basements. We are also anxious, now, to make our installations as close-coupled as possible, thus saving material.

Probably the thing most contractors fear is high velocity drafts across floors where the returning has to cross wide floor areas to reach the inside wall returns.

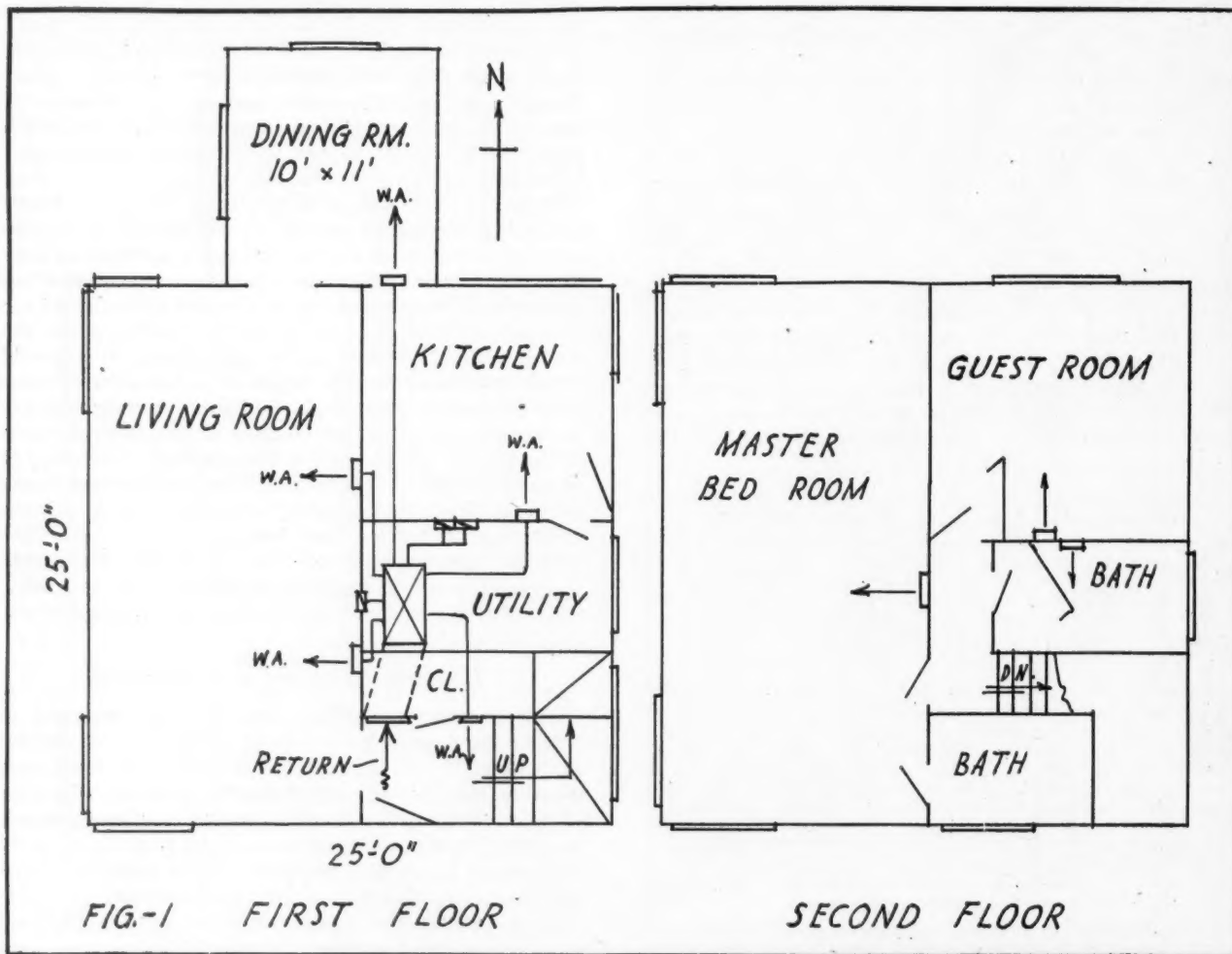
Two interesting examples of actual installations where returns were placed on inside walls and only one and two returns used in large houses are shown in the two floor plans.

In approaching the problem of installing warm air furnaces in the "no-basement" house, we studied Fig. 119 and Fig. 230 Engineering Experimental Station, University of Illinois. Fig. 119 shows that the average temperature at any

level is about .6 of a degree from the temperature of the center of the room. Fig. 230 shows that the tendency is for the supply to set up a secondary circulation in the room which draws the floor air back toward the registers, and quoting from page 356 of Gravity Warm Air Heating Digest of Research Engineering Experimental Station, University of Illinois, "It has been observed that in all rooms the most pronounced movement of air is toward the warm air registers under the inductive action of the stream of heated air emerging from the registers. Returns located near the windows, although helpful, do not sufficiently interfere with this movement toward the warm air registers to prevent the presence of a layer of cool air near the floor."

This seems to indicate that it is possible to make our returns on inside walls directly into the utility room and furnace without going under the floor and risk the possibility of cooling the air.

In a gravity coal-fired warm air system the flow



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of air is reasonably constant and this has a tendency to keep the secondary circulation in the room going. With this in mind we decided to go to continuous blower operation, using high side wall registers to eliminate the possibility of cool air in the off periods of the burner striking room occupants.

We also found that drawing the air off the floor when the burner is off or the drafts closed and throwing this air out into the hot ceiling air lowered the temperature at the ceilings and raised the floor temperature, so that when we had 70 on the floor the ceiling temperature was about 76 degrees. This method is not a theory as we have been installing jobs this way since 1938 and have had no failures in over fifty installations.

The floor plans of two extreme houses illustrate the adoption of this method.

Fig. 1 is a two-story steel house, with the main body of the house 25x25 ft., and a dining room measuring 10x11 ft. added on to the north. Although this house is small it has a heat loss of over 125,000 Btu per hour. This house, built ten years ago for year-round occupancy, had never been lived in during the cold weather as it could not be heated. Every one who had tried to correct the heating system had tried cutting more and more cold air returns from the first and second floor rooms, with no success.

We eliminated all of the returns on the outside walls and took one return from the front hall

directly through the clothes closet and into the furnace without going under the floor, which by the way, was a steel floor covered with linoleum and no insulation whatsoever, the house having no basement. Notice that the air returning from both the kitchen and the dining room had to pass through the living room to get to the return. This caused no uncomfortable draft even though the large volume of air necessary to supply the large heat loss of such a small space as the dining room was involved. Even at sub-zero temperatures, a thermometer laid directly on the floor registered 70 degrees when a thermometer at the thermostat registered 72 and the ceiling temperature was 76 degrees. This house was heated with gas, and when the gas burner was on the floor temperature had a tendency to rise to 72 degrees, the same setting as the thermostat. This house was corrected in December, 1938, and has been lived in the year round continuously.

The other extreme case is Fig. 2, showing a basement-less house 100 ft. long and 50 ft. wide with a second floor over part of the downstairs. This house has two returns direct to the furnace, which is in a closet a little off center. One return is from the living room directly into the furnace, and the other from the hall. The living room, dining room, butler's pantry and kitchen are two steps lower than the rest of the first floor. This is a gas heated home, in which the yearly heating cost is about \$145.00.

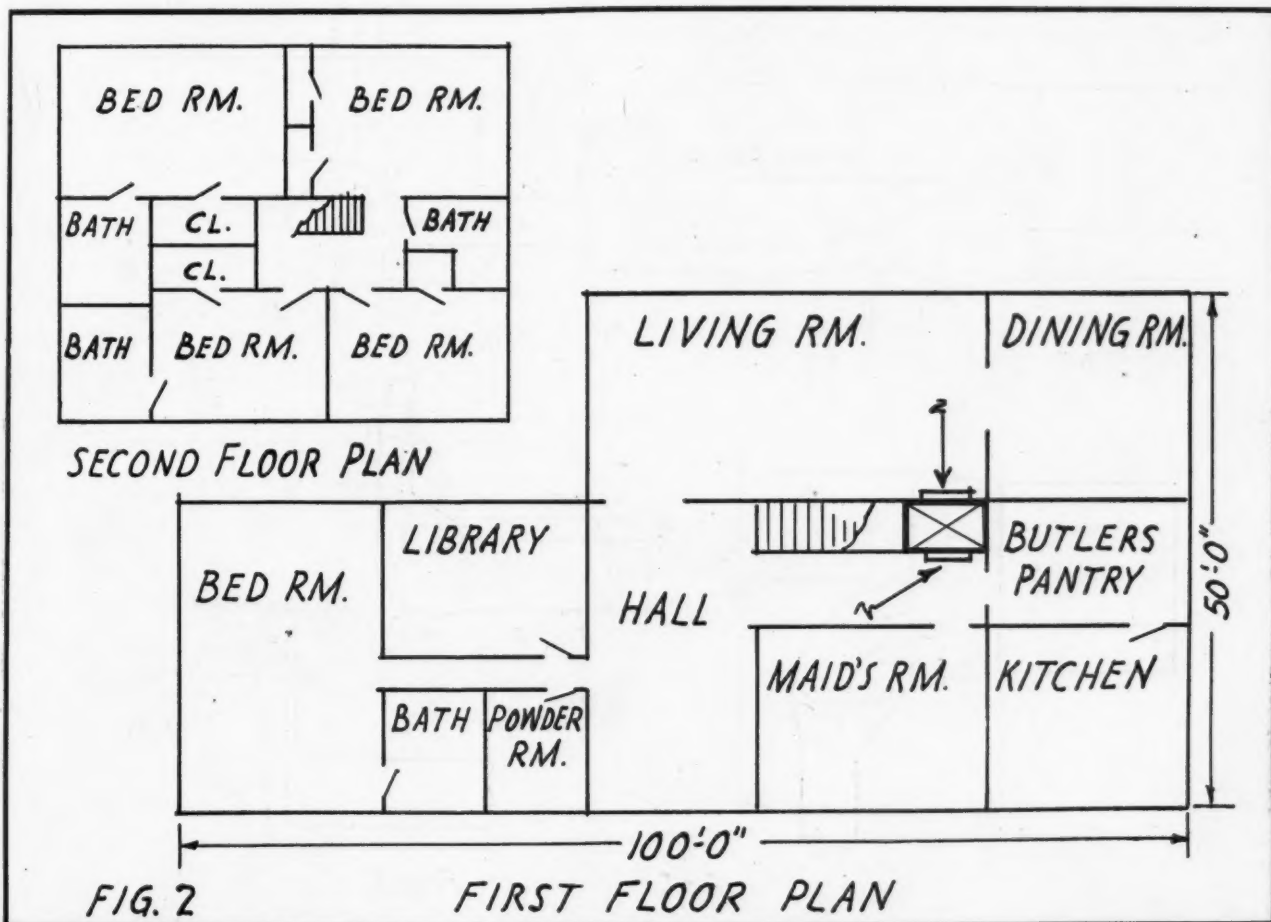


FIG. 2

FIRST FLOOR PLAN

Most Duct for the Least Material

By Robert L. Marks
Air Conditioning Engineer, Topeka, Kansas

In the December, 1941, Artisan, Robert Marks explained his interesting method of filling in a Data Sheet using charts and graphs by various engineers as explained during past years in American Artisan. His results are efficient dimensions—but dimensions without efficient ducts and fittings are worthless. So this article shows efficient pipework to accompany efficient engineering.

TO quote Professor S. Konzo: "It is not necessary to sacrifice heating results. In fact, any material used which does not fulfill its function is a waste of material. Now even more than before we must have MAXIMUM results with MINIMUM expenditures of material."

Maximum results fortunately make for minimum expenditures in materials, in energy (Electricity), fuel, and eliminate the need of oversizing equipment to take care of faulty instal-

lations. The "Factor of Ignorance" and the "Factor of Safety" are often confused; they are separate and distinct things so by eliminating the "Factor of Ignorance" we curtail the need for the "Factor of Safety."

Figuring a duct system to equal friction, properly sized to equivalent lengths, and computing the loss of temperature accurately will give maximum results at minimum expenditures. It requires more mental exertion, a little more

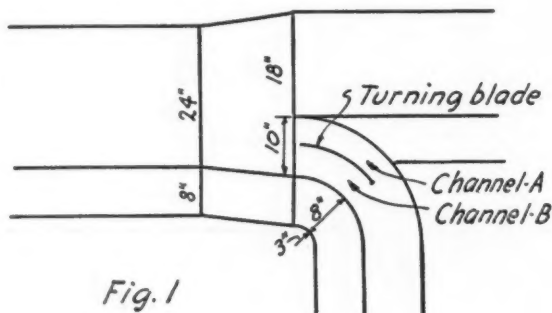


Fig. 1

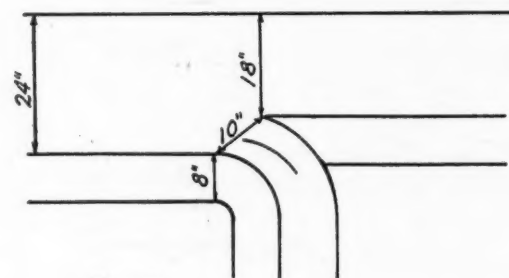


Fig. 2

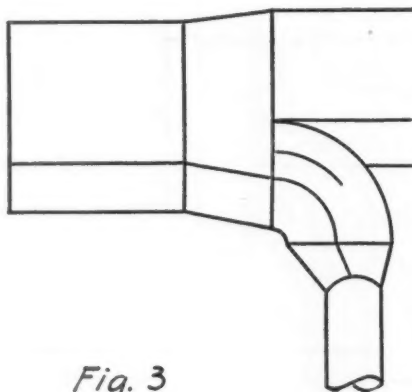


Fig. 3

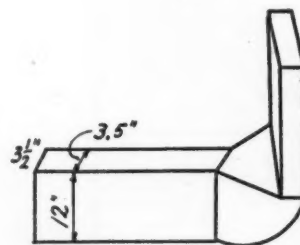


Fig. 4

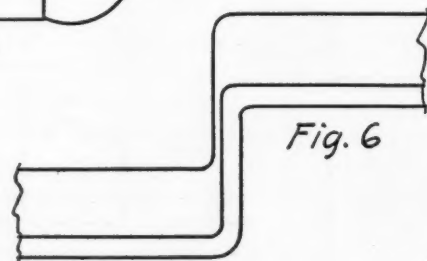
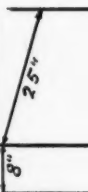


Fig. 5

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knowledge, more care and application, but on these there is no priority.

No matter how well we figure our duct sizes no good is gained unless the branches are properly "taken off" so that they actually get their allotted proportion of air.

The duct system should be constructed to eliminate, as far as possible, any interruption to the free flow of the air; we must eliminate obstacles that cause turbulence or turmoil, so that the air flow works with, rather than against itself.

The use of turning blades cannot be recommended too strongly.

Good and Bad Fittings

Fig. 1 shows the most efficient "take off." It is positive and, aside from the direction change, there is no interruption but only a slight change in velocity. The objections to this fitting are material and cost of fabricating.

Fig. 2, while not quite so positive as Fig. 1, does provide all other features and saves material and cost. Figs. 1 and 2 are equal in so far as equivalent length is concerned; each should be figured by adding 10 feet of length to actual length when the turning blade is used. Without the turning blade, this elbow has a resistance of 52 feet of straight pipe.

The formula used to dimension an elbow hav-

ing the same resistance as so many lengths of straight pipe is: $\text{Ratio} = \text{Throat Radius} \div \text{Diameter}$. In this case we have two channels, each 5 x 8 (the equivalent of a 6.9 inch round pipe). The Ratio for channel A is 1.16, for channel B is .44 or an average Ratio of .8. The Friction Chart shows this has the same resistance as 14 diameters of straight pipe, or 8 feet. In arbitrarily using 10 feet for this elbow we do so to simplify. We find that by using 10 feet we have increased the width of the duct less than $\frac{1}{4}$ inch, and in following this through the other charts shown in the December article we find that no material difference results. On other 90° elbows the same small differences are found, except where the radius is equal to 100% or more of the diameter, where it is the same without the use of turning blades. So it is good practice to use 10 feet for 90° and 5 feet for 45° elbows, except where the Radius is 100%, or on large industrial jobs, where the charts should be used with turning blades.

Fig. 3 shows converting the branch from rectangular duct to round pipe.

Fig. 4 shows a rectangular leader connected to a wall stack (same size) but with a reverse angle. Here we not only have a dynamic change of direction but a velocity change as well. Ten feet should be added for the direction change and 5 feet for velocity change.

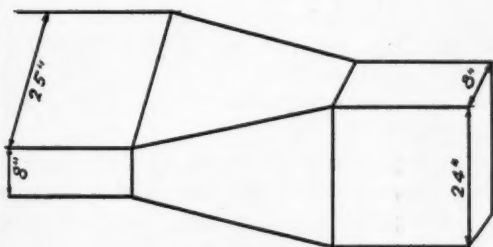


Fig. 7

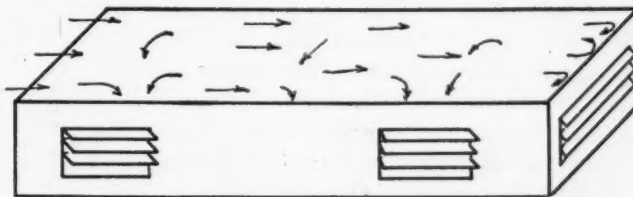


Fig. 10

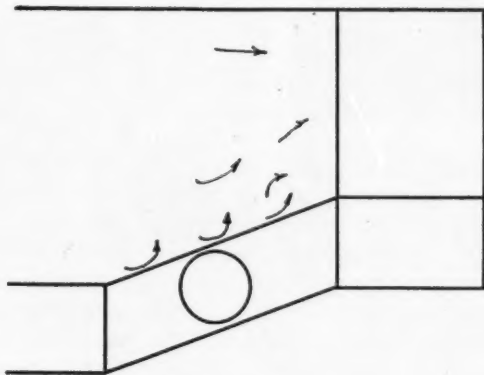


Fig. 8

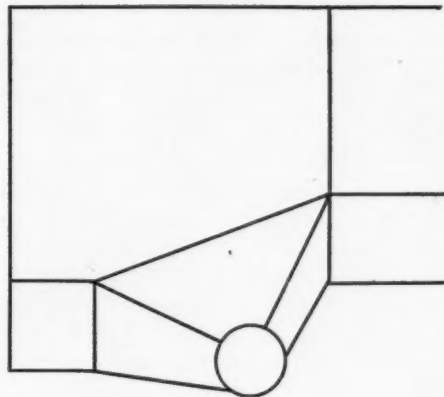


Fig. 9

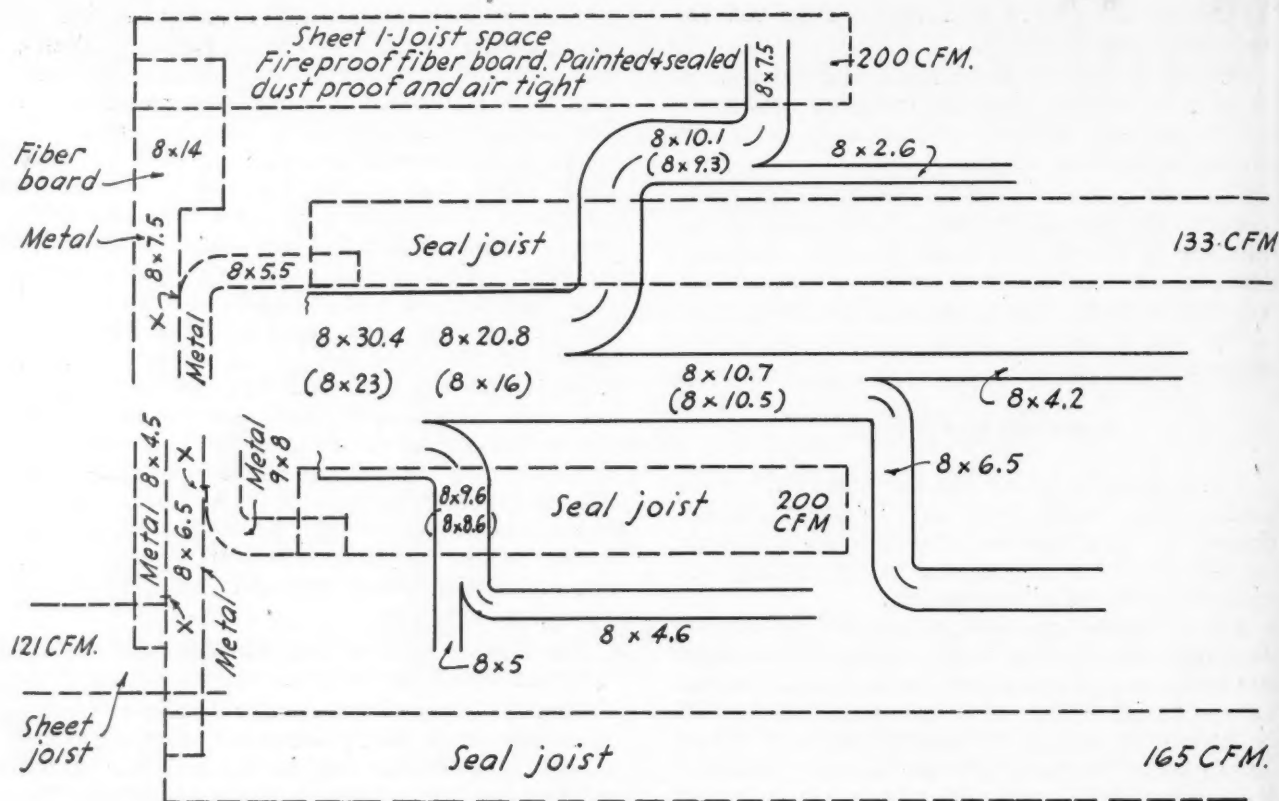


Fig. 11

Here is a simplified method for finding the correct temperature loss in a stack. Find the temperature where the leader and the stack meet, find the temperature in degrees at the register, then use just half of this loss. The difference in final results is inconsequential.

Figs. 5 and 6 show a cross over; 10 feet should be used for the equivalent length of this turn.

Fig. 7 is sometimes necessary to reverse the angle without changing the size; 5 feet should be used for this velocity change.

Fig. 8 is often used. It is easy to see the turbulence built up and the unnecessary use of iron.

Fig. 9 is similar to Fig. 8, but with the "take off" a transition. This shows little improvement over Fig. 8, the cost equals that of Fig. 2, but we still lose all of Fig. 2 efficiency.

Fig. 10 is a system used in cooling. Sometimes a "core" is used to "grab" some air where the grille is cut in. In either case it is most wasteful, with little efficiency.

In Figures 8, 9 and 10 there is no way to correctly calculate or even estimate sizes or results; these fittings depend on high pressure instead of dynamic force. Cooling jobs using any of these systems often must be augmented by ceiling fans for the distribution of the air. There is a great waste of material, wear and tear on the equipment, and operation costs are excessive.

In Fig. 11 the supply system is in solid lines. The branches are all figured correctly, the mains are sized to the total area of the meeting branches

so that the branches can be taken off square. These branches have a length exceeding three times their diameter. In normal times this method proves satisfactory, but today this method should not be used as it is a material waster. Figures show sizes by this method and in brackets the resulting sizes where mains are correctly sized.

Returns are in broken lines, using fiber board. In this case we are sheeting the joist. Should joists not be available, a box can be used. On account of the difference in friction between boards and iron, spaces should, where boards are used, be much larger. Just how much does not matter; enough so that we are sure that the friction set up is such that it will not reduce our air flow volume.

On this layout our return air system is an extended plenum idea reversed so we can take more liberties with the return than with the supply. In one the pressure is "out" in the other "in"; the blower "pushes" one and "pulls" the other. The metal ducts of the return system are figured to equal friction and to equivalent length from the most extreme point back through the entire duct. Since the blower will "pull" from the line of least resistance, these resistances must be built up so that they equalize to deliver their allotted amount of air.

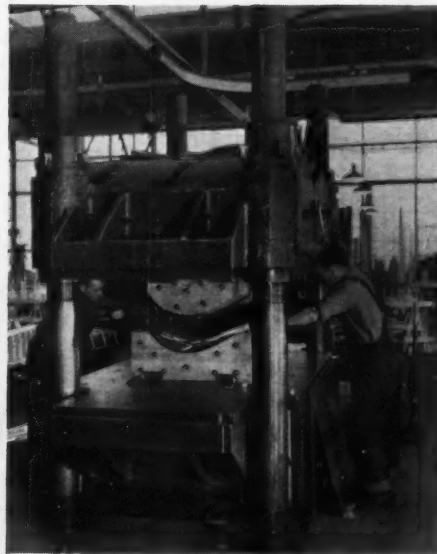
At points marked X the two sides can be joined; this will save one side, or the duct can be made the full width of combined ducts and the separation be made the same as turning

(Continued on page 96)

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DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING

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Wisconsin Apprenticeship Standards for The Sheet Metal Industry

Industrial Commission of Wisconsin,
Apprenticeship Division,
Madison, Wisconsin,
January 15, 1944

EVER mindful of the need for skilled mechanics in the Sheet Metal Industry in the state of Wisconsin, and recognizing the rights of the public in demanding a properly trained mechanic for the installation of sheet metal work, employer and employee state organizations have appointed a Joint Apprenticeship and Training Committee of equal representation to develop minimum standards which are to be used as a guide in various communities to train mechanics in the sheet metal trade. This committee, having been duly designated as advisory to the Wisconsin Industrial Commission, has formulated these standards.

The State Committee will assist local trade groups in organizing Local Joint Apprenticeship and Training Committees and in interpreting and adapting the provisions of these state-wide standards to local conditions. With these standards as a guide and the cooperation of the State Committee, it is hoped that employer and employee groups throughout the state will be enabled to set up adequate training systems for all persons desirous of becoming skilled mechanics in this particular trade.

These standards were formulated by the State Joint Sheet Metal Workers' Apprenticeship and Training Committee and approved by the Sheet Metal Contractors Association of Wisconsin, Inc., and the Wisconsin Council of Sheet Metal Workers. They are consistent with the National Apprenticeship policies of the Sheet Metal Workers International Association of Sheet Metal Worker Contractors and of the Federal Committee on Apprenticeship.

1. Definition of Sheet Metal Apprentice:

A sheet metal apprentice shall mean a person at least 16 years of age who is engaged in the learning of the sheet metal worker trade and who is covered by a written agreement with his employer, approved by the Wisconsin Industrial Commission, providing for not less than 10,000 hours of reasonably continuous employment for such person and for his participation in an approved schedule of work experience through employment, supplemented by at least 144 hours per year of related classroom instruction.

2. Qualifications for Apprenticeship Applicants:

Applicants for a sheet metal worker apprenticeship must be at least 16, and not over 21 years of age and should preferably have a high school education or its equivalent and not less than the 10th grade. Exceptions may be made by the Joint Apprenticeship and Training Committee for those who have been engaged in the trade or who have unusual qualifications.

All applicants shall submit detailed information to the Joint Apprenticeship and Training Committee on the following:

1. Birth certificate.
2. Record of school courses and grades.
3. Doctor's certificate of physical fitness.

3. Probationary Period:

All apprentices indentured under these standards shall be given a probationary period not exceeding 500 hours, and in no case shall this period exceed four calendar months. During this probationary period annulment of the indenture may be made by either party to the contract, upon notification in writing to the Industrial Commission, without the formality of a hearing.

4. Term of Apprenticeship:

The term of apprenticeship shall be not less than five (5) years and no less than a total of 10,000 hours of combined work experience and related instruction.

5. Work Schedule:

	Approx. mos. or hrs.	
1. General stockroom and simple sheet metal work	6	1000
2. Operation of hand and machine tools ..	6	1000
3. Roofing and spouting	6	1000
4. Cornice and skylights	3	500
5. Heating and ventilating	6	1000
6. Furnace work	6	1000
7. Exhaust and blowpipe work	6	1000
8. Welding	6	1000
9. Air conditioning	6	1000
10. Specialty work	3	500
11. Erection in sheet metal	6	1000

Approximately 1500 hours of the above schedule may be used for miscellaneous work.

It is recognized that in some parts of the state it may be difficult to follow the foregoing schedule of work processes; however, it is recommended that it be adhered to as closely as possible.

6. Related School Instruction:

The apprentice shall attend a part-time vocational school which teaches subjects pertaining to the sheet metal trade for a minimum total of 720 hours during his apprenticeship. Hours so spent shall be considered as hours of work and shall be compensated as though he were on the job.

The apprentice shall attend night school on his own time at least two nights per week, while schools are

in session, for the entire apprenticeship, in addition to the regular daytime school, and take such subjects as the Joint Apprenticeship Committee and the employer deem advisable.

In cities, towns or areas having no vocational school or other schools that can furnish related instruction, the apprentice shall be required to take a correspondence course in sheet metal that meets the approval of the State Joint Sheet Metal Apprenticeship and Training Committee.

7. Working Hours:

All apprentices shall be governed by the same working-hours as the journeymen under whose supervision they are employed. Under no conditions shall the hours of work conflict with the required hours of school attendance under these standards.

8. Apprenticeship Rates:

	Per cent journeyman's wage
First 1000 hour period.....	30
Second 1000 hour period.....	35
Third 1000 hour period.....	40
Fourth 1000 hour period.....	45
Fifth 1000 hour period.....	50
Sixth 1000 hour period.....	55
Seventh 1000 hour period.....	60
Eighth 1000 hour period.....	65
Ninth 1000 hour period.....	75
Tenth 1000 hour period.....	90

9. Special Provisions:

The above schedule of wages for sheet metal apprentices shall be the minimum paid; however, in localities where the prevailing journeyman's wage will not permit the apprentice to exist on the above wage schedule, it shall be the duty of the local Joint Apprenticeship and Training Committee to adjust the same.

In the event an apprentice completes his tenth period (10,000 hours) in less than five (5) calendar years, then the tenth period wage rate shall prevail to the end of the apprenticeship calendar time.

Apprentices in their ninth and tenth period of training are to be considered as *senior* apprentices and shall have all the privileges of a journeyman sheet metal worker.

10. Eligibility of Employer:

An employer to be eligible to employ a sheet metal apprentice must have been engaged in the sheet metal business for a period of not less than one year. He must also be a regular employer of sheet metal workers and have at least one (1) journeyman employed for not less than 39 weeks per year.

11. Ratio:

The ratio of apprentices to journeymen shall be one (1) apprentice to one (1) journeyman regularly employed, and one (1) additional apprentice to each three (3) additional journeymen. This ratio may be adjusted by the local Joint Apprenticeship Committee, subject to the approval of the State Committee, to meet the needs of their locality; however, at no time shall there be more apprentices indentured than the trade will actually absorb.

12. Duties of the State Joint Sheet Metal Workers Apprenticeship and Training Committee:

1. The State Joint Apprenticeship and Training Committee shall consist of three (3) members repre-

senting the Sheet Metal Contractors' Association of Wisconsin, Inc., and three (3) members representing the Wisconsin Council of Sheet Metal Workers, together with alternates from each group. All members shall be appointed for one year.

2. It shall be the duty of the State Joint Apprenticeship and Training Committee to assist in the formation of local or district Joint Apprenticeship Committees.

3. To determine the area or district to be covered by such local or district Joint Apprenticeship and Training Committee.

4. To assist such committees in formulating and approving standards for their district, based on the State Sheet Metal Standards.

5. To act in an advisory capacity on all questions submitted to them by local or district Joint Apprenticeship and Training Committees.

6. To recommend to the local or area Joint Apprenticeship and Training Committee that apprentices be indentured to the Joint Committee in localities where contractors are unable to train apprentices in all phases of sheet metal work or are unable to keep them reasonably continuously employed.

13. Duties of Local or District Sheet Metal Workers Joint Apprenticeship and Training Committee:

1. The Local or District Sheet Metal Workers Joint Apprenticeship and Training Committee shall be composed of equal representation of employers and journeymen. In no case shall this committee be less than four (4) members.

2. It shall be the duty of the Local or District Joint Apprenticeship and Training Committee to pass upon the qualifications of the employer and apprentice who wish to enter into an apprenticeship contract.

3. To formulate standards, covering their city or district, based on the State Sheet Metal Standards.

4. To cooperate with the school authorities in the preparation of courses and in all other matters relating to the apprentice's classroom work.

5. To have the apprentice and employer appear before the Joint Apprenticeship and Training Committee at regular intervals for the purpose of determining the progress the apprentice is making and whether or not he is receiving training in all parts of the trade.

6. To transfer apprentices from one employer to another when in the judgment of the Committee it is to the best interest of all concerned.

7. To consult with school authorities as to school attendance and progress apprentice is making.

8. To provide, insofar as possible, reasonably continuous employment for all apprentices.

9. To attempt to settle all disputes between employer and apprentice before submitting same to the Industrial Commission.

Requirements and Information Covering Applicants for Sheet Metal Apprenticeship:

1. (a) You must be 16 years of age or over.
(b) You must supply necessary proof of age.
2. (a) You must have completed the tenth grade (two years of high school) or its equivalent.
(b) You must furnish school record from your principal, showing time attended and courses taken.
3. (a) You will be required to attend a part-time vocational school for a minimum total of 720 hours.

MASTER'S QUALIFICATIONS

- Name of Master.....Date.....
- I. Length of time operating in sheet metal business.....
 - II. (a) How many journeymen do you employ regularly?
(Regular employment means 39 weeks, or 1560 hrs. or more per year)
 - (b) How long and how steadily have they worked for you?
 - III. Why do you desire an apprentice?.....
 - IV. Nature of Work.....
 - V. Do you keep books and records of costs?.....
 - VI. (a) Have you ever had an indentured apprentice under contract?
 - (b) Did he complete his apprenticeship?.....
 - (c) If not, why not?.....
 - (d) Do you still employ him?.....
 - II. (a) Do you contribute under the Social Security Act?
 - (b) What type of liability insurance do you carry?.....
 - (c) Do you carry compensation insurance?.....
 - III. Itemize the major sheet metal equipment in your shop, exclusive of cars and trucks.
 - IV. Are you willing to appear before the Committee when called upon for examination of your apprentice and present his time records to the committee for examination?
 - V. Are you willing to abide and comply with the existing rules and regulations of the Local Joint Sheet Metal Apprenticeship and Training Committee?
- (Signature)

APPLICATION FOR SHEET METAL APPRENTICESHIP

(To be submitted to the Sheet Metal Apprenticeship and Training Committee)

- Date.....19....
- Name of Employer.....
- Name of Applicant.....
- Address.....
- Telephone..... Age..... Height..... Weight.....
- Place of Birth..... Date.....
- Married or single..... Have you proof of age.....
(Present proof of age with application)
- Previous Equipment:
- Company..... Address.....
- No. months or hours..... Kind of work.....
- Company..... Address.....
- No. months or hours..... Kind of work.....
- Company..... Address.....
- No. months or hours..... Kind of work.....
- Educational background:
- No. years in grammar school..... No. years in high school.....
- Other training (correspondence, night trade school, etc.....)
- Have you ever been convicted of a crime?.....
- Reason for choosing this trade.....
- Are your parents living?..... Do you live with them?.....
- Father's occupation.....
- You shall submit evidence of a recent physical examination.
- References:
- Give the names and addresses of three responsible persons, not relatives, who have known the applicant for at least three years.
- Name..... Address.....
Phone.....
- Name..... Address.....
Phone.....
- Name..... Address.....
Phone.....
- (Signature of Applicant)

- (b) You will be required to attend night school two nights per week for the entire term of apprenticeship on your own time.
4. (a) You may be penalized three hours' pay by your employer for each hour absent from day school when absent without good cause.
- (b) Your employer must pay you your regular wages for attending day school a minimum period of 720 hours.
- (c) Failure to meet the day school requirements subjects the apprentice to cancellation of his indenture by the Industrial Commission.
5. (a) You must submit satisfactory evidence of doctor's certificate of physical fitness.
- (b) The committee recommends that your employer carry unemployment compensation and liability insurance.
6. You must show satisfactory school reports as to progress, attention, conduct, interest, and so forth, while attending school as an apprentice.
7. You will have to appear before the local Sheet Metal Apprenticeship Committee at intervals for consultation as to progress, interest, schooling, treatment, and so forth.
8. You must appear for examination for journeyman at the expiration of 10,000 hours.
9. You must be safety-minded and comply with the safety laws, rules and practices.

10. You must be interested in learning the sheet metal trade as an apprentice.
11. You will be required to work both diligently and faithfully in the interest of the employer and learning the trade.

Master Sheet Metal Worker Information On Apprenticeship:

1. All applications of employers for an apprentice shall be submitted to the Joint Sheet Metal Apprenticeship and Training Committee in their city or district.
2. You must state why you desire to employ an apprentice.
3. You must have employed one or more journeymen sheet metal workers for a period of 39 full weeks or more or an individual total of 1560 or more hours each during the past year.
4. You must give reasonable assurance that you will have sufficient work to keep both the apprentice and a journeyman sheet metal worker employed a minimum of 39 full weeks per year.
5. You must have been in business as a master sheet metal contractor for one or more years.
6. You shall be required to appear before the Local Sheet Metal Apprenticeship and Training Committee at intervals to keep the committee informed

(Continued on page 96)

in session, for the entire apprenticeship, in addition to the regular daytime school, and take such subjects as the Joint Apprenticeship Committee and the employer deem advisable.

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7. Working Hours:

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3. (a) You will be required to attend a part-time vocational school for a minimum total of 720 hours.

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- Company..... Address.....
- No. months or hours..... Kind of work.....
- Company..... Address.....
- No. months or hours..... Kind of work.....
- Company..... Address.....
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- Educational background:
- No. years in grammar school.....No. years in high school.....
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- Have you ever been convicted of a crime?.....
- Reason for choosing this trade.....
- Are your parents living?.....Do you live with them?.....
- Father's occupation.....
- You shall submit evidence of a recent physical examination.
- References:
- Give the names and addresses of three responsible persons, not relatives, who have known the applicant for at least three years.
- NameAddress
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- NameAddress
- Phone
- NameAddress
- Phone
- (Signature of Applicant)

- (b) You will be required to attend night school two nights per week for the entire term of apprenticeship on your own time.
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(Continued on page 96)

Recommended Practice for the

Spot and Seam Welding of Low Carbon Steel

(Reprinted by permission of American Welding Society)

THE American Welding Society has recently approved and published a bulletin "Recommended Practices for the Spot and Seam Welding of Low Carbon Steel." The data contained in this bulletin has been compiled by canvassing approximately 60 fabricators of mild steel structures and resistance welding equipment manufacturers and is intended to meet the needs of the U. S. Navy and War Departments and those in industry engaged in the production of war materiel. The work was initiated by the Resistance Welding Research Committee of the Welding Research Council and has been approved by the Resistance Welding Standards Committee of the American Welding Society.

The bulletin is composed essentially of two charts—one each for spot and seam welding together with an explanation for their use. For example, after the metal gauge is determined, the welding electrode or roll is selected, the pressure adjusted, and the weld time is set and a pull test made. This is the order in which the data appears from left to right on the charts.

This bulletin represents the best information available at this time on the spot and seam welding of low carbon steel and is therefore recommended as standard practice during the war emergency.

Following is the report:

Recommended Practice for the

SPOT AND SEAM WELDING of LOW CARBON STEEL

Approved for publication by R. W. Clark, Chairman, Committee on Outline of Work, April 29, 1943

THE data submitted on the following charts have been compiled by canvassing approximately 60 fabricators of mild steel structures and resistance welding equipment manufacturers. It is the best information available at this time for low carbon steel spot and seam welding; it is recommended as standard practice during the war emergency. The work was initiated

LOW CARBON STEEL SPOTWELDING DATA

THICKNESS OF THINNEST OUTSIDE PIECE	MINIMUM ELECTRODE DIA. & SHAPE	NET ELECTRODE FORCE	WELD TIME	APPROX. CURRENT	MINIMUM WELD STRENGTH	APPROXIMATE DIAMETER OF FUSED ZONE	MINIMUM OVERLAP	MINIMUM WELD SPACING
"T" INCHES	GAUGE MIN. INCHES D	POUNDS	CYCLES (60 PER SECOND)	AMPERES	POUNDS	INCHES	"L" INCHES	2 "T" 3 "T"
0.010	32	1/8 3/8	200	4	4000	200	0.10	3/8 1/4 1/4
0.020	26	3/8 3/8	300	6	5500	450	0.13	7/16 3/8 3/8
0.030	22	3/8 3/8	400	8	7000	800	0.16	7/16 1/2 3/4
0.040	20	1/4 1/2	500	10	8000	1200	0.19	1/2 3/4 1
0.050	18	1/4 1/2	650	12	9000	1750	0.22	3/4 1 1 1/4
0.060	16	1/4 1/2	800	14	9600	2300	0.25	3/4 1 1 3/4
0.080	14	3/8 5/8	1100	17	10800	3450	0.29	1 1 1/4 1 1/2
0.094	13	3/8 5/8	1300	20	11500	4250	0.31	1 1/4 1 1/2 1 3/4
0.109	12	3/8 5/8	1600	23	12000	5200	0.32	1 1/4 1 3/4 2
0.125	11	3/8 5/8	1800	26	12600	6000	0.33	1 1/4 1 3/4 2 1/4

NOTES:

- 1 TYPE OF STEEL—SAE 100.
- 2 MATERIAL FREE FROM GREASE, SCALE, & DIRT.
- 3 DATA FOR TOTAL THICKNESS OF PILE-UP NOT EXCEEDING 3 "T".
- 4 MINIMUM SPACING IS THAT SPACING FOR WHICH NO SPECIAL PRECAUTIONS NEED BE TAKEN TO COMPENSATE FOR SHUNTED CURRENT EFFECT OF ADJACENT WELDS.
- 5 THICKNESS OF THINNEST OUTSIDE PIECES DETERMINE WELDING CONDITIONS.
- 6 ELECTRODE MATERIAL
MINIMUM CONDUCTIVITY—75% OF COPPER.
MINIMUM HARDNESS—75 B ROCKWELL.
- 7 STRENGTHS SHOWN FOR HIGHLY STRESSED STRUCTURES



iated by the Resistance Welding Research Committee of the Welding Research Council and has been approved by the Resistance Welding Standards Committee of the AMERICAN WELDING SOCIETY.

The data were compiled for mild steel (S.A.E.-1010) for thicknesses up to 0.125 in. The Standardization Subcommittee will publish at a later date welding data on high carbon steels (such as X4130) and heavier gages of mild steel.

The information in the charts has been arranged in the order in which a welding operator or supervisor would set up a welding machine. For instance, after the metal gage is determined the welding electrode or roll is selected, the pressure is adjusted, the weld time is then set and a pull test made. This is the order in which the data appear from left to right on the welding charts.

Low Carbon Spot Welding Data

Two forms of electrodes were suggested by several manufacturers. One is the type shown at the top of the column entitled "Electrode Diameter and Shape." The other was a straight electrode with dome type tip with a 2½-in. radius. We have shown the former because it was more currently used but both types are acceptable provided the diameter of the contact surface (*d*) is held to the values indicated. The large diameter of the electrode (*D*) is a minimum diameter; in other words, a diameter less than that indicated will cause excessive "mushrooming" of the tips.

Net Electrode Force refers to the exact force between contact surfaces.

Welding Current has been given approximately to help specify and calculate the capacity of welding machines. It should not be used as an exact value to obtain a given weld strength.

Minimum Weld Strength, as explained in footnote 7, is that strength which should be obtained for high-

ly stressed structures. A simple pull test in a reliable testing machine with the samples unconfined is the accepted method of checking this value. For structures with a high inherent factor of safety, the minimum strength indicated could be reduced approximately 30%. Recommended test metal sizes are given under Army Air Corps specification No. 20011-C.

Diameter of fused zone data should be helpful if cross-sectional etch tests are made to check penetration of the weld in the outside thicknesses.

Minimum lap indicates the required overlap as shown in the sketches at the bottom of the chart. It is extremely important not to go below the values shown, otherwise the weld will be too small and difficult to maintain under shop conditions.


Spacing is indicated for twice the thickness of the thinnest outside piece (2"*T*") and three times the thickness of the thinnest outside piece (3"*T*"). As explained in footnote 4 the minimum spacing is that distance for which no special precautions need be taken to compensate for the shunted current effect of adjacent welds. This shunted current effect is greater for heavier pile-ups, hence the increased spacing for 3"*T*."

Low Carbon Steel Seam Welding Data

The data on this chart are similar to the spot welding chart. It is intended for pressure tight seam welding, and therefore indicates welding roll width instead of electrode diameter.

"On times" and "off times" indicates the time during which the current is flowing and interrupted. If a slower welding speed is necessary the "off time" should be increased, rather than increase the number of welds per inch. A greater number of welds per inch than those values indicated results in excessive heat input; this might tax the equipment unnecessarily and cause undue distortion of the work.

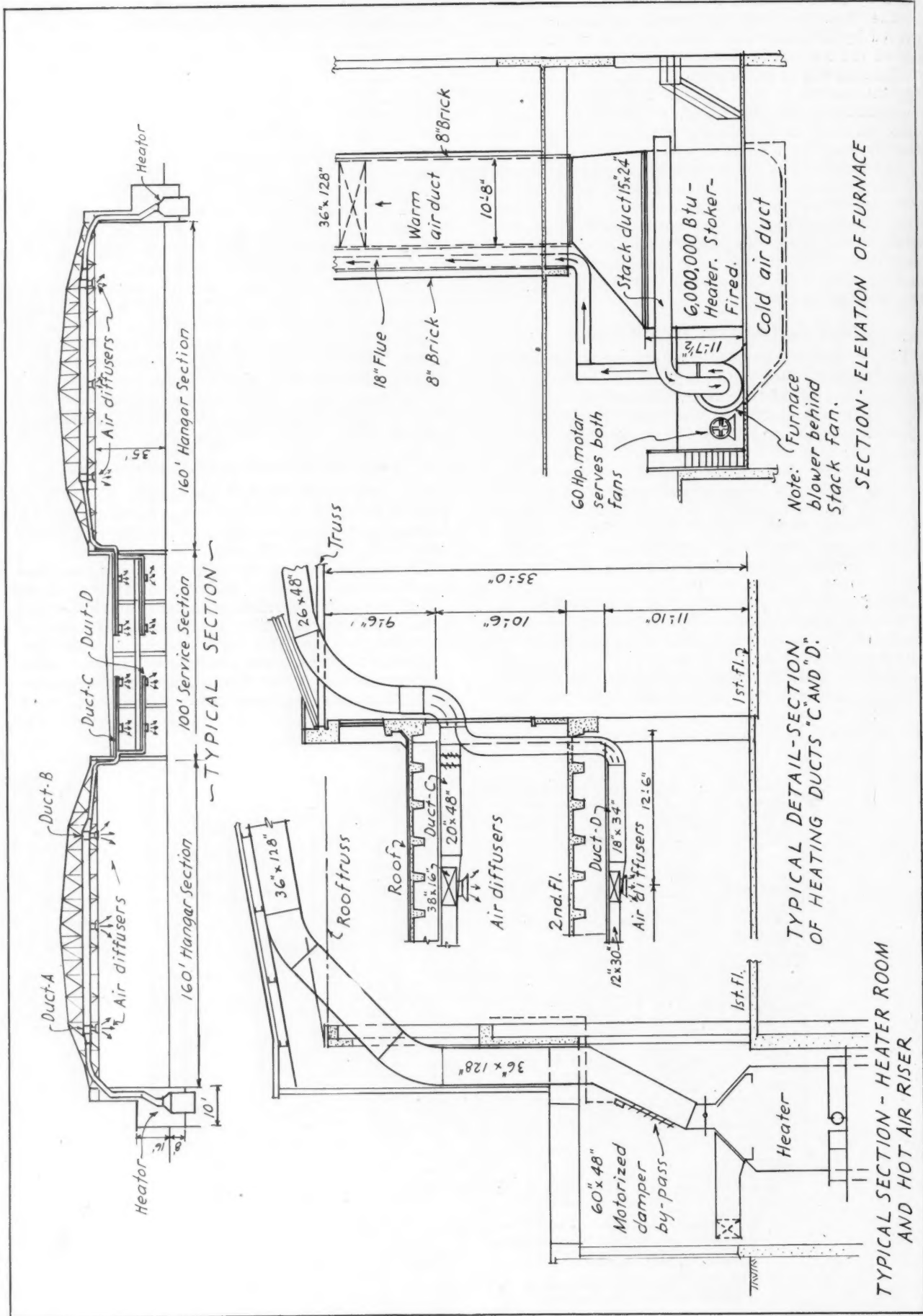
LOW CARBON STEEL SEAM WELDING DATA

LOW CARBON STEEL SEAM WELDING DATA										
THICKNESS OF THINNEST OUTSIDE PIECE		ROLL WIDTH & SHAPE		NET ROLL FORCE	ON TIME	RECOMMENDED OFF TIME (PRESSURE TIGHT)	MAX. WELD SPEED	WELDS PER INCH	APPROXIMATE CURRENT	MINIMUM OVERLAP
"T" INCHES	GAGE			POUNDS	CYCLES (50 PER SECOND)	CYCLES	INCHES PER MINUTE	AMPERES	INCHES	
0.010	32	3/16	3/8	400	2	1	80	15	8000	3/8
0.020	26	3/16	3/8	550	2	2	75	12	11000	3/8
0.030	22	1/4	1/2	700	3	2	72	10	13000	1/2
0.040	20	1/4	1/2	900	3	3	67	9	15000	1/2
0.050	18	3/8	1/2	1050	4	3	65	8	16500	3/8
0.060	16	3/8	1/2	1200	4	4	63	7	17500	3/8
0.080	14	3/8	3/4	1500	6	5	55	6	19000	11/16
0.094	13	7/16	3/4	1700	7	6	50	5.5	20000	3/4
0.109	12	1/2	3/4	1950	9	6	48	5	21000	3/4
0.125	11	1/2	3/4	2200	11	7	45	4.5	22000	7/8

NOTES:

- 1 TYPE OF STEEL SAE 1010.
- 2 MATERIAL FREE FROM GREASE, SCALE, & DIRT.
- 3 DATA FOR TOTAL THICKNESS OF PILE-UP NOT EXCEEDING 3"
- 4 WELD STRENGTH WITH WELDS PER INCH AS SHOWN EQUALS APPROXIMATELY 85% STRENGTH OF PARENT METAL.
- 5 THICKNESS OF THINNEST OUTSIDE PIECES DETERMINE WELDING CONDITIONS
- 6 ROLL MATERIAL:
MINIMUM CONDUCTIVITY- 75% OF COPPER.
MINIMUM HARDNESS- 75B ROCKWELL.

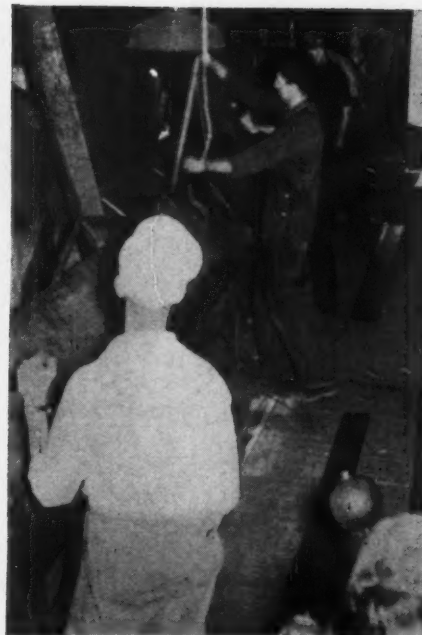




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Above, left—Spot welding the neck which hangs the air diffuser below the supply duct. Center—All fittings, such as elbows, were made up complete in Des Moines (with turning vanes) to eliminate field construction. Right—Three gangs on three brakes folding some narrow duct sides. Below is layout of piping in one section of the building, showing sizes. On Facing Page—Details of the installation.

300,000 Pounds of Metal Ducts *Fabricated in Des Moines, Erected in Oklahoma City*

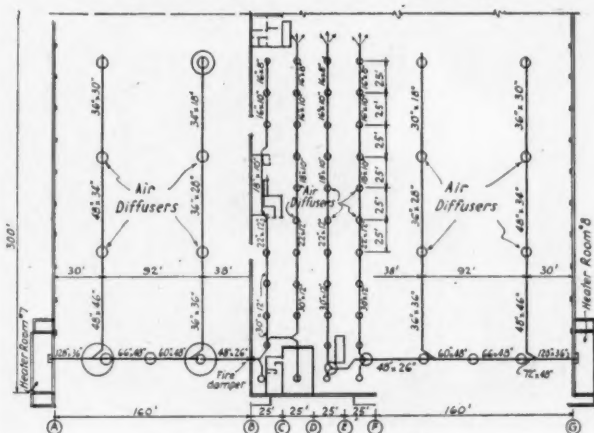
IOWA Sheet Metal Contractors, Inc., of Des Moines, has handled a number of very large "camp" installations (Camp Campbell, Fort Des Moines, Camp Atterbury, Camp McCoy, Camp Ellis, among others), but one contract recently completed is unusual in that all material was fabricated in Des Moines and shipped by truck to Oklahoma City—some 550 miles away. One truck of the closed van type made, regularly, two

round trips a week for more than three months while the original contract and additions thereto were under way.

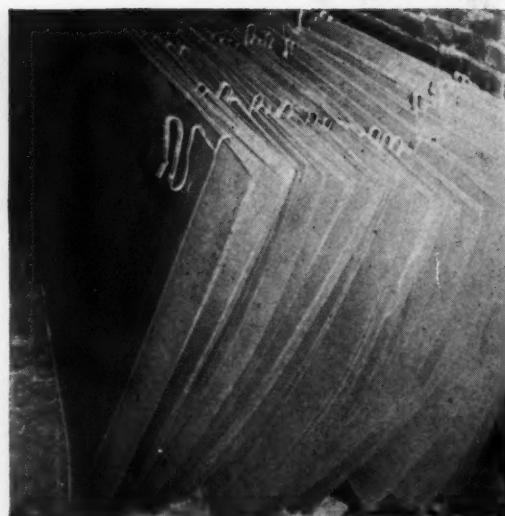
In the contract there were more than 300,000 pounds of all metal ducts fabricated in Des Moines and installed in Oklahoma City. Interesting is the fact that approximately 80 per cent of the 300,000 pounds was installed in a 30-day period by a crew working ten hours a day, seven days a week.

These 300,000 pounds of ducts are used to heat and ventilate the first and second floors of a Modification Center building shown in a part of the heating plan and the cross section elevation. At each of the four corners of the building, in a small house attached, there is a stoker-fired, 6 million Btu output Dravo warm air heater with a 75,000 cfm blower. As the detail and cross section show, the air is carried up from the furnace and across the floor of the trussed section above the lower chords of the trusses, then down into the lower, two-story center building. Typical duct sizes are indicated on the partial first floor plan. Note duct sizes starting off the furnace of 128 by 36 inches and ending some 400 feet from the furnace in 16 by 8-inch ducts.

These ducts are all rectangular in section and, as shown in the plan, air is discharged through diffusers suspended below the trusses on circular necks. In the



ONE-HALF FIRST FLOOR PLAN
Note: Nine 23,200 cfm ventilating exhaust fans are to be installed on roof of center section—Five fans are for 1st floor & four for 2nd floor.



Large ducts were made up as sides, top and bottom. Then each piece was spray painted and stacked as shown at the right for an overnight dry. The spacers shown (made of scrap metal) kept the wet paint surfaces from sticking together. Hundreds of thousands of square feet of metal surface were thus painted.

center, two-story building, the diffusers open directly from the ducts (see elevation). Air is returned to the blowers through louvered openings in the building-furnace house wall.

The photographs show operations in the Des Moines shop where all metal work was fabricated. The firm believes that greater economy of production and greater speed is obtained by home fabrication where the extensive facilities of two shops can be called upon rather than a field shop where space is limited and power machinery is lacking.

The duct plans show many hundreds of feet of straight duct. To facilitate delivery, these ducts were fabricated as four flat sides with locks formed ready for joining. Then the flat pieces were spray painted and air dried so that, on the job, erection could be handled piece by piece for large ducts or sections assembled on the floor for erection as complete units. Fittings, on the other hand, were made up completely assembled unless the fitting was too large to handle. Further, in all elbows and turns vanes were specified so the vanes were formed and riveted in place in Des Moines so that no field work was necessary.

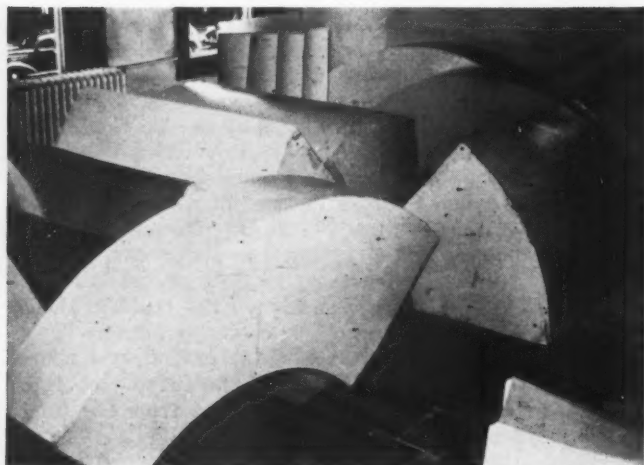
The necks (see photograph) were rolled, beaded and

riveted; then the ring which holds the diffuser in position was spot welded as shown in a photograph. These rings were cut and rolled in the shop.

The method briefly described above enabled approximately 20 men working in the home shop to keep the crew of about 40 men busy on the job and completed the contract as mentioned in the second paragraph.

In addition to the duct work for the heating system the contract also called for setting the furnaces and fans, with motors, and installing nine 29,200 cfm ventilators on the roof of the central building. There were also ten exhaust fans and small systems to install. After all this work was completed, the erection crew installed some 150,000 square feet of corrugated iron on the roof trusses. This corrugated metal serves as fire or draft stops in connection with a sprinkler system.

The Modification buildings were built under the supervision of the Corps of Engineers with Col. F. J. Wilson, District Engineer, Tulsa, in direct charge and Major E. A. Cornell, Area Engineer. Plans were prepared by The Austin Company and the Dunning Construction Company, Oklahoma City, were the General Contractors.



Left—Large fittings made up complete and painted were given one floor of the home shop to dry and await transportation. Right—Beginning of all duct fabrication—the squaring shears where 150 tons of sheets were squared and cut to size for this job.



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Plan for this neighborhood business



HOME owners and landlords are waiting for the day when they can repair or modernize their long neglected property. Millions in war bonds are undoubtedly already earmarked for that purpose. This field, so close to home, will be a source of highly profitable business for sheet metal, plumbing and heating specialists.

It is not too soon to shape your merchandising plans, with these local possibilities in mind. Sheet metal roofing, gutters and downspouts, air-

conditioning, duct-work, chimneys and ventilators are just a few of the things which will be in active demand.

There is a type of U·S·S Steel Sheet best suited for each of those jobs, from the common black sheet to enduring, mirror-like stainless steel, copper steel to resist corrosion, galvanized steel fit to face any weather, Paint Bond which takes paint instantly with an enduring grip.

U·S·S metallurgical research is your assurance of uniformly high

quality, superior workability in the entire, complete line of U·S·S Steel Sheets.

As part of our service to men in the sheet metal trades, we shall be glad to consult with you regarding your particular problems. Also, we would like to send you a copy of "The U·S·S Sheet Metal Worker's Guide," a handbook which contains a lot of useful information.

Write for your copy of this practical, authoritative book today. It is free and you incur no obligation.

U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco

TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

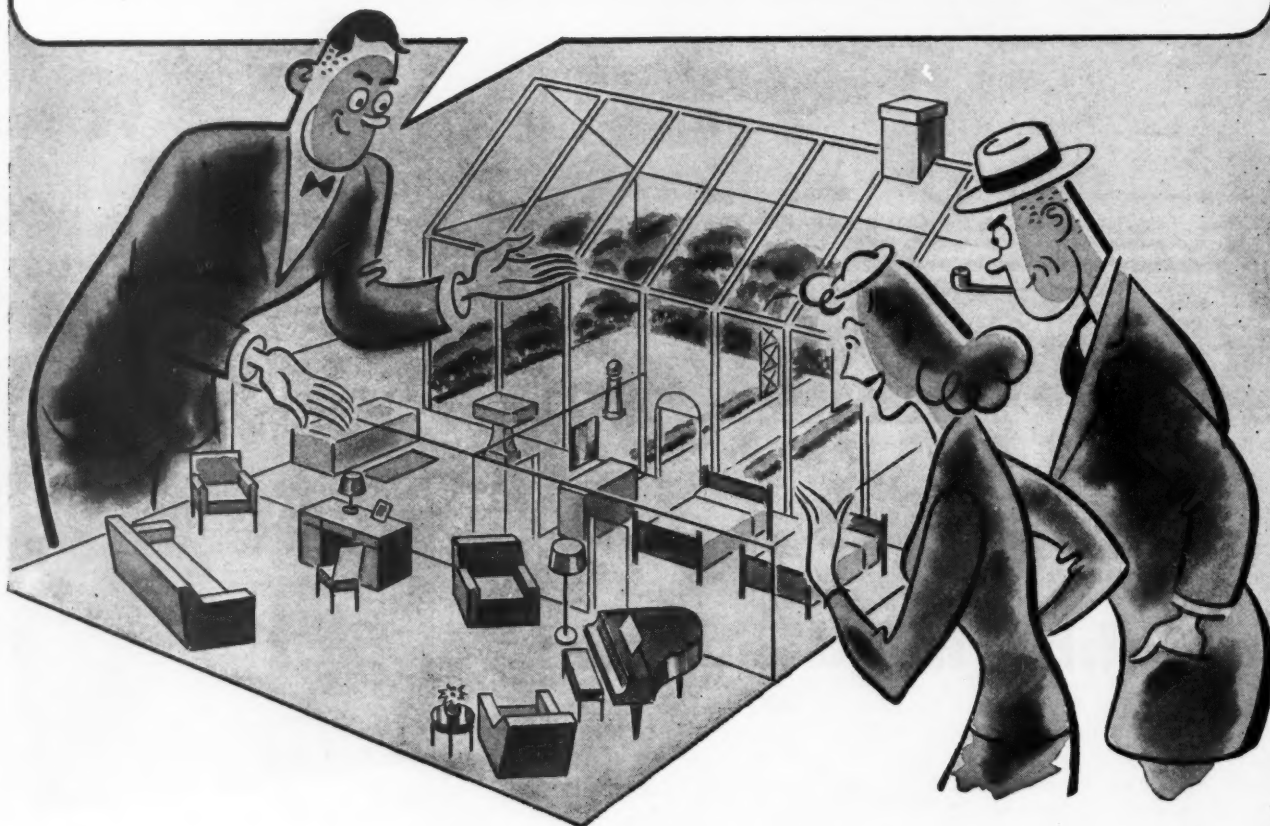
United States Steel Supply Company, Chicago, Warehouse Distributors

United States Steel Export Company, New York



UNITED STATES STEEL

**"The Beauty of this house is that
the INSIDE is OUTSIDE and Vice Versa"**



If you must have something radically different in a postwar house, you might as well go the limit and here it is. In this postwar pipe dreamer's house you can be outdoors all the time, getting plenty of fresh air, while you're eating, sleeping or taking a bath. Nothing to obstruct the view, and think of the entertainment you're providing the neighbors.

If it gets a trifle chilly, go in the enclosed garden to get warm. Sort of reverses all our old-fashioned ways

of life, but don't we have to conform to the wild-eyed ideas of the postwar pipe dreamers? Or do we?

As manufacturers we were a bit scared at first because it looked as if the universal adoption of this type of house would do away with furnaces. However it seems that a heating unit of some kind will be needed to heat the garden. So we're breathing easier now because indications are we'll still be in business for a while after the war, making dependable heating equipment.

**BUY MORE
WAR BONDS!**



THE RYBOLT HEATER COMPANY

615 MILLER STREET



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Officers and Directors (left to right)—Kolbenschlag, Merrick, Varden, Walsh, King, Gundlach, Orton, Kramer, Walter, Clark, Meyer.

Sheet Metal Contractors National Ass'n

JUDGED from any angle, the first national convention of the Sheet Metal Contractors' National Association was a tremendous success. More than three hundred contractors and representatives of manufacturers and jobbers attended the convention; in addition, there were some 65 ladies in attendance.

Many important decisions were reached at the convention, to name a few briefly: a basis for dues was established which will insure sufficient money to operate the association; committees were appointed to consider specific problems confronting each activity group in the association, these committees to formulate plans for successfully solving the problem; contact was firmly established with numerous local and state associations to insure active co-operation of all associations during 1944; and immediate programs covering seven most important problems were set up to become the goal the association will attempt to reach during 1944.

Dues

Duly announced as amendment No. 1, covering membership and dues, the association voted to increase the dues of contractor members as follows: Minimum dues, \$10 per year; based upon the contractor's productive payroll, the dues will be as follows: For a productive payroll \$10,000 to \$15,000, dues \$15 per year; for payroll \$15,000 to \$25,000, \$25 per year; for payroll \$25,000 to \$50,000, \$50 per year; for payroll \$50,000 to \$75,000, \$75 per year; for payroll \$75,000 and over, \$100 per year. It was also properly voted that auxiliary members, meaning thereby jobbing and manufacturing firms, may join the association as auxiliary members at a minimum dues of \$25 per year. To be decided later will be the question of taking individual salesmen into the association as associate members at \$10 per year dues.

The Board of Directors and Budget Committee estimates that the dues as listed above, on the basis of 300 active paying members, will bring into the treasury in the fiscal year May 1, 1944, to April 30, 1945, approximately \$8,500, including the dues to be secured from manufacturers and salesmen.

Secretary

It was announced in the agenda that discussion would be opened at the convention on the possibility of employing a full-time paid secretary. Discussion in the Board of Directors' meeting and on the floor indicated that the association in the coming fiscal year cannot hope to collect by way of dues and donations sufficient money to employ a full-time paid secretary with an office and a stenographic staff. Accordingly, it was voted in the Board of Directors to continue Clarence J. Meyer, the present secretary, as a part-time secretary, operating from his office in Buffalo, and hiring a full-time stenographer. Mr. Meyer will be paid \$100 per month and it will be possible through the use of the full-time stenographer, to increase the amount of mailing material sent to solicit membership and to promote the various activities of the association. Then, at a later date, if membership increases and money increases in the treasury, the problem of employing a full-time paid secretary will be opened up again.

Activity Forum

As established in the by-laws and announced in the program on the first afternoon session, the convention divided itself into Activity Forums; these forums to

Officers

President—Patrick Varden, Albany, N. Y.
1st Vice President—J. E. Merrick, Louisville, Ky.
2nd Vice President—B. Kolbenschlag, St. Louis.
3rd Vice President—L. A. Blattmann, New Orleans.
Treasurer—C. M. Gundlach, Sandusky, Ohio.
Secretary—Clarence J. Meyer, Buffalo, N. Y.
Sgt.-at-Arms—Homer Selch, Indianapolis.
Directors, for three years: J. S. Clark, Detroit; J. V. King, Sanford, N. C.; H. L. Orton, Akron, Ohio.
Continuing Directors: Frank Kramer, Milwaukee; R. E. Walsh, St. Paul; H. A. Daniel, Newburgh, N. Y.; Louis Trost, Erie, Pa.; Joe Walter, Ottawa, Ill.; M. Liebermann, Ambridge, Pa.; D. A. Mannen, Cleveland.



Activity Groups—(Upper, left)—Peterson and Olson on City Heating Ordinances; (Upper, right)—Industrial Sheet Metal Work: Warning, De-l-Tele, Harms, Shelfer, Schartow, Dennis, Novak; (Lower, left)—Labor Relations: Dose, Clark, Mallack; (Lower, right)—Dealer Education: Rynbrandt, Orton, Kolbenschlager, Ludwig, Krueger, Stowell.

permit members interested in warm air heating or ventilating, or roofing, or architectural sheet metal, or blow-pipe work, to meet together in the forum and to discuss the problems which immediately confront the group. Then these problems will be combined to form a platform for the association.

Accordingly the forums were staged; unfortunately some activities did not have enough members present to conduct a good forum, so some forums grouped together. As a result, there was a very large warm air heating forum, a very active sheet metal forum including architectural sheet metal work, and blow-pipe work. There was also an active ventilating forum, there was a fair roofing forum.

As announced in the program, these forums elected temporary officers and after suitable discussion, decided upon certain important problems which the association can endeavor to solve during 1944. Then, on the second morning session, these programs of the various associations were reported to the convention as a whole and from these forum reports, a 1944 program was established.

An overall committee to formulate the 1944 National program on the report of the forum group, submitted to the convention as a whole, the following program:

For general sheet metal contractors, a committee was established to do these things: (1) to promote the use of more sheet metal work in general building construction; (2) acquaint users with the advantages of sheet metal as a durable material; (3) distribute to contractor members, in some form to be determined later, suitable data on proper sheet metal construction and application; (4) to acquaint the contractor members and also architects and engineers with the proper method of applying sheet metal work in order that the general standards of the industry may be raised. As a committee to advance the work of this group, the following members were appointed: Perkinson, Chi-

cago; Ruebeck, Waco, Texas; King, Sanford N. C.; Schmidt, Rochester, N. Y.; Drehobl, Chicago; Pluth, Lincoln, Ill.; Metzger, Kalamazoo, Mich.; Dose, St. Paul, Minn.; Kellogg, Albany, N. Y.; Walter, Ottawa, Ill.

To co-operate with architects and engineers in the problem of solving the headache of bid peddling and to promote, advance and discuss the possibilities of having sheet metal and roofing bids by sub-contractors read at the general contractor's letting, to stop bid peddling, and in order to promote the idea of listing the sub-contractor's bidding with each general contractor; and to investigate the possibilities of advocating bid depositories in key cities, a committee was appointed consisting of: Meyer, Buffalo, N. Y.; Merrick, Louisville, Ky.; Joyce, Albany, N. Y.; Becker, St. Louis; Guenther, Chicago.

To investigate possible standards of design, construction, and installation of commercial and industrial sheet metal work—meaning thereby ventilation, fume removal, dust collecting and all allied activities in which the sheet metal contractor engages with manufacturing and commercial firms; and to make available to contractor members engaged in this activity, certain data in the form of booklets, handbooks, sketches, etc., in order that the standards of the industry may be raised and standardized, the following committee was appointed: Dennis, Decatur, Ill.; E. Harms; Peoria, Ill.; De-l-Tele, Cambridge, Mass.; Warning, Oshkosh, Wis.; Otten, Buffalo, N. Y.; Novak, Chicago; Bjornson, Omaha; Schartow, Midland, Mich.

To co-operate with the publicity and merchandising and with the codes and installation codes committees of the National Warm Air Heating & Air Conditioning Association; and to foster and promote and advise with local groups of contractors on the possibilities of establishing suitable heating ordinances in city building codes; and to co-operate with any associa-

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tions or organizations engaged in advancing or promoting or raising the standards of gravity and forced warm air heating installations, the following committee was appointed: Olson, Omaha, Nebr.; Peterson, Minneapolis, Minn.; Barrett, Dayton, Ohio; Kalvog, Chicago.

Note—it is hoped that there will be a member appointed to this committee from every city having a city heating code, and that as time goes on, certain other individuals interested in instigating and establishing heating codes will voluntarily join this group. The whole proposition of heating codes in city ordinances is becoming increasingly active and will be so following the war, so it is anticipated that this committee will be one of the most important groups in the association. Volunteers for the committee are therefore solicited.

To establish proper relations with labor and to protect our contractor members whenever disputes may arise with union business agents or under certain union regulations; to assist local members engaged in a dispute with unions; to co-operate with union officials in holding the work we are now entitled to do, and to protect the interests of our industry in the future and after the war in holding and maintaining new classes of work which sheet metal contractors are jurisdictionally awarded; and to serve as a national committee in all problems relating to relationships with labor, the following committee was appointed: Townsend, Mt. Vernon, N. Y.; Lannen, Cleveland; Keays, Albany, N. Y.; Hoffman, Milwaukee; Mallack, Saginaw, Mich.; Dose, St. Paul; Clark, Detroit.

To co-operate with local associations engaged in fostering and advancing the training of apprentices in our industry; to digest and study existing apprentice training programs; to contact state and local apprentice training bodies; to contact vocational schools teaching sheet metal work; and, later, to possibly submit a nationally approved apprentice training program, the following committee was appointed: Kramer, Milwaukee; Luckhardt, Pittsburgh; Birthrong, Waukesha, Wis.; Wright, St. Louis.

For the purpose of stimulating and conducting

dealer education in warm air heating, to co-operate with suitable committees from the National Warm Air Heating & Air Conditioning Association presently engaged and to be engaged later in dealer education; to co-operate with any and all schools or associations fostering dealer education by means of correspondence courses or short courses; to advance and promote the idea of holding short courses similar to the short course at Michigan State College in just as many states and cities as possible across the country; to co-operate with the National Warm Air Heating & Air Conditioning Association in securing satisfactory instructors for such short course schools; and to generally co-operate with any committees, agencies or associations engaged or to be engaged later in any programs designed to better improve or standardize the installation of gravity and forced warm air heating systems in given areas, the following committee was appointed: Stowell, Aurora, Ill.; R. Wallis, Peoria, Ill.; Manny, Chicago; Kohlbenschlag, St. Louis; Krueger, Madison, Wis.; Ludwig, Ottawa, Ill.; Orton, Akron, Ohio.

Note—If plans under consideration by the National Warm Air Heating & Air Conditioning Association and various schools and other agencies interested in advancing the art of designing and properly installing gravity and forced warm air heating systems materializes, it is anticipated that this committee will be one of the most active in the association. It is hoped that many additional contractor members interested in schools and dealer education will voluntarily join this committee.

Other Business

According to proper announcement sent to members, the following decisions were reached by written ballot at the convention:

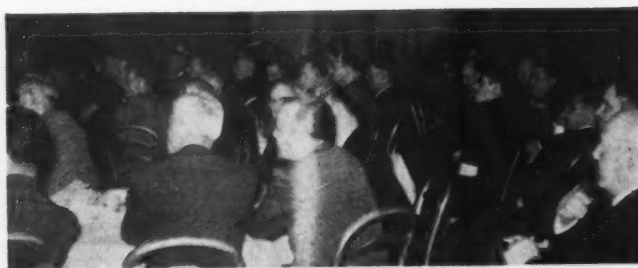
On Amendment No. 2, to add the words "and roofing" to the name of the association, the association voted "no." Accordingly, the name will continue as—Sheet Metal Contractors National Association. On Amendment No. 3 to Article II, Section 5-a, a change was voted as follows—"the fiscal year of this associa-



Two Upper pictures—Ventilation—Industrial Sheet Metal combined forum got busy at once on possible standards of design and contract problems.



Lower picture—The Warm Air Heating Forum was an overflow session spilling out into the hall. Dealer education, design and installation codes, city ordinances were discussed.



Upper right—Chairman Guenther and Secretary Reining of the Convention Committee (Missing is Treasurer Ebbert). Upper, center—R. A. Dadisman (Luncheon speaker). Upper right—President Clark hands gavel and turns meeting over to President-elect Varden. Left, second row—J. A. Scott (Luncheon speaker) discusses heating future. Remainder of pictures show luncheon and banquet crowds.

tion shall be from May 1 to April 30." On Amendment No. 4, Article 4, Section 6, it was voted that traveling and promotional expenses of the president and/or the secretary shall be allowed for all necessary meetings in the interests of the association.

Treasurer's Report

As of the second day of the convention, the National treasurer reported that the total receipts to date were \$2,133.56. Total disbursements were \$693.10. Balance on hand, \$1,440.46.

Luncheon Speakers

In order to make it convenient to keep contractor

members together during the luncheon period and to conserve time, the program committee arranged to have two important speakers address the assembly at the noonday luncheons. At the first luncheon, R. A. Dadisman, American Rolling Mill Company, spoke on the subject of "The Postwar Construction Picture for Warm Air Heating and Sheet Metal Contractors." Mr. Dadisman suggested that we may anticipate after the war a continuation of a considerable amount of government control; just how long this control will continue, and what will be the general items or activities controlled, remains to be seen, but only as industry has an active National association voice, can that industry expect to make itself heard in Washington, and to

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accomplish on a National scale, the various things which must be done following the war. Our industry will not be in competition, said the speaker, with other contractors of our trade—our competition will be with the purveyors of automobiles, radios, etc.; we will have to be active individually and through our various associations if we are to promote the idea of the home owner spending more money on his house and its equipment such as furnaces, rather than spending his money for radios and automobiles.

Said Mr. Dadisman, the problems which confront all business, no matter how large or how small, after the war, is the employment of 55,000,000 workers at a total annual payroll of approximately \$140,000,000,000. This is forty per cent more individuals employed than we have ever had working in a peace-time year. Since there are only 500 so-called "big businesses" and since there are some three million "small businesses" and since this sheet metal, warm air heating is definitely "small business" the principal burden of employment and maintaining payrolls will fall on the shoulders of the small business man. It must be up to every individual in our industry and other small industries to lay plans now to employ one or a few more men than they normally employed in peace times—if we do not do this, there will be a depression, and there will be men unemployed.

Mr. Dadisman showed a chart of the era immediately following the war of 1812, when we had a relatively short period of prosperity and then a short period of depression; after the civil war there was a longer period of prosperity and a much longer period of depression; after the first world war, there was a rather long period of prosperity covering several years and then a tremendous depression. These charts are no indication that we will follow suit after the present war, but Mr. Dadisman pointed out that we do have business cycles of prosperity and depression and the only guarantee that prosperity following the present war will be long and the period of depression short will be if we employ the number of persons as listed above. Mr. Dadisman's chart also indicated that we have done a much better job in this war in the matter of controlling prices than we did last war. Also, there are much larger accumulated savings of money in the bank and bonds and these accumulated savings together with the current scarcity which has given everyone an itch to buy should be stimulus sufficient to warrant a very long period of prosperity after the

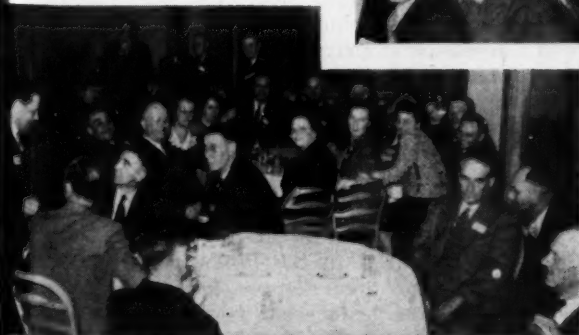
close of the war. All surveys show, said the speaker, that the postwar construction program may be a program tremendous beyond comprehension—added to new house construction, variously estimated from 500,000 to 1,000,000 new family dwelling units per year for ten years, there will also be a gigantic modernization demand which can be at least fifty per cent above the modernization total of 1940. There can quite readily be a 900,000 replacement furnace demand immediately after the war. There will be more than one hundred billion of dollars of savings to be spent for modernization and house construction.

If the war ends on one front before the other, there is the possibility of a relaxation in the allocation of critical materials for the manufacture of essential civilian goods. But no doubt any such relaxation of allocations and any increase in manufacture of civilian goods will be heavily controlled by Washington agencies in order to prevent any unfair competition or any runaway inflation.

Two very important problems confront all industry after the war—the first is taxation which will permit industry expansion and the second is what to do with surplus goods. The hope is that this tremendous quantity of surplus goods will not be dumped on the market to completely upset all of the standard methods of distribution and sources of production and supply.

At the second day's luncheon, J. R. Scott, Chairman, Publicity and Merchandising Committee, National Warm Air Heating & Air Conditioning Association, spoke on the subject "The Warm Air Heating Picture in the Post-War Period." Said Mr. Scott: We should question if in the post-war period our warm air heating industry will enjoy as wide and favorable an acceptance of our product and our method of heating as we enjoyed before the war. Surveys being made now, and completed recently indicate that there is not too much preference for warm air heating until after the home owner has investigated the possibility of other types of heat and has satisfied himself that he is buying the very latest in indoor comfort. Since other forms of heating have not been idle during the war period, and since these other forms of heating will be able to offer lower priced heating systems after the war, together with additional advantages which they did not offer previously, we may anticipate keener competition between types of heating.

Said Mr. Scott—if we are to hold this preference
(Continued on page 103)



The "Hospitality Room" was a crowded evening affair—standing room only. Only those with weak voices failed to enjoy themselves.

The New York Convention

NEW YORK State, Sheet Metal, Roofing & Air Conditioning Contractors Association's 21st annual convention, held in Albany March 29 and 30, certainly proved the association has made substantial progress during 1943.

The New York association has, under New York State laws, set up a group compensation insurance plan under the managership of Laverack & Haines. Mr. Haines reported that for the major portion of 1943, more than \$66,000 of premiums were paid in by members of the group. For the whole of 1943 fiscal year, the total paid in premiums will approach \$86,000 as compared to 1942's total premiums of \$70,000. Had the same members insured under a mutual insurance plan, the premiums paid in would have probably exceeded \$100,000. During the same period, the losses paid were \$32,500 or a rate of 31.9 per cent which is substantially under the State permissible ratio of 60 per cent losses to premiums paid in. This indicates, reported Mr. Haines, that the members of the group insurance plan are not heavy accident risks. The surplus indicated reached \$34,104 and at the time of the report there were 63 members in the group plan.

Mr. Hostetter of the Laverack & Haines company cautioned contractors not to take work they are not classified to do under the insurance program. A considerable discussion developed under Mr. Hostetter relative to the various rates of premiums paid for different classes of work as, for example, the flat roof rate is \$14 while the steep roof rate is \$20. The group is asking for an inside sheet metal classification, under the argument that inside work is not as hazardous as outside work. If this new classification is granted, it will be necessary for members to separate their payrolls and labor costs in order to establish actual times and wage rates paid for inside work. Whereas, the outside rate at present is \$6.85, an inside rate if secured might be approximately \$3.85. This inside rate is also being asked for furnace work.

Indicative of the complications of securing new rates, Mr. Hostetter reported that if a \$3.85 inside rate is secured, his can not cover erection, so that a contractor must maintain inside fabrication costs and outside erection costs and separate his payrolls accordingly. There is also a ventilating rate of \$3.51, but this is obtained only on appeal. If the appeal is granted, the contractor securing this rate may do ventilation work only and may not do sheet metal, furnace, or roofing work in the same shop. There is also the provision that a ventilating contractor may operate at the \$6.85 rate for shop fabrication and \$3.51 for outside erection—this is quite complicated but indicative of the laws in effect. Furnace work is at present rated under a plumbing and heating rate of \$4.10 which applies to shop fabrication of heating ducts, whereas the \$3.51 rate should be charged for erection of duct on the job, if the contractor operates as a ventilation contractor.

Postwar State Construction

The Postwar Public Works Planning Program of the State of New York was presented by Holden A. Evans, Jr., Executive Secretary, who said that the Commission is operating on the basis that only some such

program is adequate insurance against a WPA following the war. Mr. Evans reported that there are some 600 Federal and State Aid agencies engaged in post-war planning. The State program, as presently outlined will establish necessary public construction of which employment of labor is at present only a secondary consideration. The prime purpose is to provide necessary public structures and to schedule construction in such a way that the contraction will not conflict with any private construction which may keep labor employed fully. Should, in the postwar period,

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private construction keep all labor fully employed then a great part of the State program will slide along until there is a recession in private construction. The Commission foresees approximately one billion in construction in the state. The Commission is attempting to remove all frills or unnecessary construction and where necessary will bear at least 50 per cent of the cost for the construction of local municipal structures.

Copper — Postwar

"Copper and Its Use in the Postwar Period" was discussed by Max Walten, Copper & Brass Research Association, who suggested that from many years of investigation, exposure, inadequate construction, and poor anchorage are found to be responsible for most of the copper exterior failures. Many years of re-

search has made the association feel that a floating copper gutter is a better construction than numerous small sheets each sheet nailed permanently into position, but Bureau of Standards Tests now under way and the experience of numerous contractors has indicated that properly applied, permanently nailed small sheets do provide a gutter which does not break apart under the impact of expansion and contraction. No final decision on this point has been made as yet.

After the last war, reminded Mr. Walten, copper enjoyed a very rapid "comeback" and there seems to be no reason why copper should not enjoy a similar popularity after this war. Contractors should expect to get considerable work from war plants which were built with less durable materials and much of this protection must be replaced after the war. There is also the problem of metal deterioration because of the underlying green lumber used in gutters and as backup for the copper, or metal. There should also be considerably more termite protection postwar than previously. Light copper used as a vapor barrier seems a good possibility for work postwar and the same lightweight copper used as a weather shield in walls, etc., was just getting accepted when the war stopped construction. Mr. Walten concluded his discussion by demonstrating with the aid of charts numerous constructions which eliminate metal failure.

Slate and Tile Roofing

George Ballard, contractor from Rochester, discussed "Slate and Tile Roofing and Repairs" demonstrating his various points with typical examples of the various slate and tile formerly used or currently used for roofing purposes. Mr. Ballard reminded contractors that tile is our oldest manmade roofing material, many of our very old civilizations employing this material, in some cases cutting the tile from solid marble blocks. The Chinese, many thousands of years ago, had glazed clay tile and in England a form of notched tile was applied several hundred years ago and much of this construction is still in place. The warm countries such as Cuba, Mexico, and South American have used tile for many years, but Mr. Ballard warned contractors against attempting to apply this old tile on new houses where the home owner has transported the tile from the old countries, because the chief difficulty is to get the tile in place without cracking or breaking. Furthermore, much of this old tile is too porous for proper use in Northern climates.

Contractors wishing to do tile work, reminded Mr. Ballard, should remember that the tile companies ordinarily quote a straight tile price under which contract you cut the necessary fixtures, but the tile companies will quote a price including fixtures; the best procedure for the average contractor is to buy the tile with fixtures because this eliminates considerable waste. Old slate roofs which are still in use after seven hundred years were applied on open batten without any nails, but using white oak pegs. Mr. Ballard showed samples of some of the first American slate from the Peachbottom quarry which were laid in 1734 and subsequently removed and relaid as many as eight times. The three best known Pennsylvania slates—Bangor, Chatham, and Albion—are still the best slates for use and of these three Bangor probably presents the least difficulty for the inexperienced contractor. It is also the best color retaining and permanent slate. There are other good slates, said Mr. Ballard, such as the Main slate, the Buckingham slate from Virginia, and some of the colored slates are in-

creasingly popular. There is only one permanent good red slate, but several good green slates. Contractors can save money by accepting slate of random width and length.

Postwar Heating

"Postwar Plans for Warm Air Heating," as viewed by the furnace manufacturers was presented by George Boeddener, managing director, National Warm Air Heating & Air Conditioning Association. Mr. Boeddener reported that the association believes that furnace production for 1944 will be just as high as production in 1943 when a total of about 190,000 furnaces of all sizes and types were produced by the industry. This 190,000 furnaces in 1943 includes the 173,000 furnaces reported by the Department of Commerce from 100 manufacturers, plus an additional ten per cent for manufacturers not reporting to the Department of Commerce. Mr. Boeddener said that there has been some increase over 1943 production during the first quarter of 1944; whether or not this increase will be maintained during the balance of 1944 remains to be seen. Some Washington agencies, reported Mr. Boeddener, visualize a total furnace production in 1944 of perhaps 240,000 furnaces if manpower problems do not get any worse.

As to postwar single family, house construction, Mr. Boeddener said various reports indicate from 300,000 to 1,000,000 new houses a year for a ten-year period, but it is probably safe to assume that during the first two or three years following the end of the war at least 300,000 new housing units will be built a year, the rate of construction accelerating as time goes on. Of interest to furnace contractors, reported Mr. Boeddener, practically every agency foresees a tremendous modernization and repair program postwar, this program approaching, in the estimation of some agencies, several billions of dollars of modernization and repair, of which heating will present a very considerable percentage. Mr. Boeddener suggested that in conjunction with this modernization and repair market contractors should lay plans to sell just as many furnaces in the 16,000,000 presently heated stove dwellings as we possibly can sell. On the basis of 16,000,000 stove-heated dwelling units, three-quarters of one per cent sales a year would represent 120,000 gravity furnaces. Then adding one-quarter of one per cent a year for forced air furnaces, totalling 40,000 furnaces, plus three per cent of 7,000,000 necessary replacements totalling 210,000 furnaces of the gravity type, plus two per cent of the 7,000,000 replacements, totalling 140,000 forced air furnaces, or an anticipated total volume of 510,000 furnaces in one year after the war stops.

The warm air heating industry should not assume that the popularity enjoyed before the war will continue after the war, because other types of heating are getting set to take more of a share of the heating postwar than they accounted for prior to the war. All of these so-called expressed desires in heating and house construction, said Mr. Boeddener, reported in various surveys, are no final proof that people will really buy what these reports indicate. Much of the buying will depend upon whether we have good conditions or bad conditions following the war. In order to maintain our popularity, we must actually install the type of heating systems we advertise and we must be prepared to offer a much better service than we did prior to the war.

(Continued on page 98)

The Illinois Convention

THE Sheet Metal Contractors' Association of Illinois, meeting April 12 and 13 in Peoria, with an attendance approaching 200 members and guests, staged one of the best conventions the organization has had since the association was reorganized a few years ago. Interest was undoubtedly stimulated by more than 2,000 letters mailed by Secretary Shaw to members throughout the state.

At the meeting, governors were appointed as follows:

W. W. Johns for the Urbana District;
Erwin Eichenberger for the Peoria district;
Joseph Walter for the Ottawa district;
Clarence Lauerman for the Galesburg district;
Frank Eynatten of Peoria.

It will be the duty of these governors to stimulate membership in the State association in their district by holding meetings throughout the year, to which contractors in the area will be invited in order to explain the benefits of state association membership.

The following men were elected officers of the association:

President—Edward M. Pluth, Lincoln.
Vice-President—C. H. Lauerman, Galesburg.
Secretary—W. Rex Shaw, Jacksonville.
Treasurer—F. I. Eynatten, Peoria.
Directors—for one year
Joseph J. Walter, Ottawa; E. A. Eichenberger, Peoria; R. A. Guenther, Chicago.
For three years
Walter Dennis, Decatur.

Small Business Problems

A very stimulating address was presented to the association by Joe C. Meek, Executive Secretary, Illinois Federation of Retail Merchants Association, who explained that Congress, as a law-making body, has done almost nothing toward postwar planning and probably will do nothing during this election year. So, it is up to business individually and through associations to prepare necessary plans for postwar planning.

The major problem which business faces, and this includes retail merchants and dealers or contractors, is to lay plans to employ at least 55,000,000 workers after the war at an annual total wage of at least 140 billions of dollars. This is more people employed and a greater annual income than America has ever provided up to the war period. If industry and business can not meet this challenge, said Mr. Meek, then probably ways will be found for government to step in and the chances are good that once government gets in control, private enterprise will go down. To employ this many persons at the stated total annual wage means that every American family will have to have at least one radio, there will have to be at least four bath tubs for every six families, there must be many more central heating plants, replacing stove-heated houses, and in order that this great mass of merchandise can be produced and sold, it will be necessary for production to be at a lower cost than we have ever reached.

Business in general should organize to remove the controls which now increase or hold prices at levels above the level we wish to have after the war. Controls, most people agree, are necessary during a war period, but after the war we will need the type of controls which expedite production and stimulate sales. Also we must remove controls which curtail profits and income. There must also be reduction, where possible, of the enormous tax burden business is now carrying.

It must be made plain to American citizens that we face one of two alternatives—either a planned economy or a system of free enterprise. This decision will not be political; it is not political now. Already, a division has appeared—on one hand we have individuals who sincerely believe that only through a planned economy can America avoid another depression; we have other individuals equally able who are convinced that only a system of free enterprise can keep America busy after the war.

Mr. Meek suggested that if we are consistent in our thinking, government must be completely out of business and this means that such agencies as Rural Electrification Administration which sells merchandise to the farmers and agencies like FHA and HOLC should be out of the financing business. Since many segments of American industry see definite good in these agencies, it is going to be difficult to be consistent in our final judgment.

Finally, Mr. Meek asked members to give serious consideration to the growing tendency of political pressure blocks working on Congress to obtain advantages for themselves alone. Men are not dying in this war, said the speaker, to foster the growth of political pressure blocs; only as all American business men exercise their citizenship through the vote can this method of government through pressure blocs be abolished. The only other alternative, suggested the speaker, is a pressure bloc from business.

Register Standardization

Ralph Blanchard of the Hart & Cooley Mfg. Co. gave a brief resume of the standardization program for registers and grilles which began in 1941 and is now well under way for the war period and for postwar planning. Standardization and simplification had some popularity in the first world war, but then the standards established were relaxed and now under the urge of government agencies interested in simplification the whole problem is up for consideration again. What manufacturers will produce in the way of registers and grilles after the war is not clearly indicated at present, but it is fairly certain that there will be intense competition between manufacturers and simplification or standardization may be one means for obtaining products at lower cost.

Savings and Loan Ass'n's

G. Hicks Fallin, Executive Vice President, People's Federal Savings and Loan Association, briefly outlined the growth of these savings associations up to the present time when the associations have some six billions of dollars of the people's money which primarily will be spent on new home construction and home improvement. Mr. Fallin said all surveys, of which the Fortune survey is typical, show that new

home construction will account for the largest expenditure of money after the war. This Fortune survey shows a twenty-one billion dollar market at 1940 prices. Air conditioning in homes, alone, by this same survey, indicates a 53 million dollar market. We have not kept pace with our need for houses during the war era. Other important factors which will stimulate house construction after the war are new families, greatly increased public purchasing power, and general deterioration of existing structures. Mr. Fallin said he believed that "Buck-Rogers" gadgets in homes after the war are open to question. But certainly we may expect many improvements which will insure more adequate or more satisfactory living conditions.

Several factors tend to limit postwar construction. One such factor is the probable shortage of millwork after the war because we have exhausted our supplies of properly cured lumber and it will take some months, perhaps, even years, to accumulate stocks of material suitable for mill work. There will also be a shortage of metal working apprentices and it will take months or perhaps years for manufacturers to get into full production. Some of these limiting factors will require from one and one-half to three years to regain their normal production volume. Generally speaking, we may look for a longer time required to reconvert to peace production than was required to convert to war production.

The building and loan associations see in modernization an even larger market than there may be after the war in new house construction. For example, air conditioning is an improvement which is possible for old houses as well as new houses and many millions of home owners will want as much air conditioning as they can afford after the war. Just how large a market there will be in new construction and modernization will depend to some degree on the financing available and in this respect the savings and loan associations report increases in savings of at least 45 per cent to which should be added the tremendous war bond savings accumulated by citizens, so that money is available or will be made available, probably at very attractive interest rates.

In closing, Mr. Fallin suggested that contractors should do everything possible to keep abreast of new improvements. For example, panel heating and the so-called "solar" house; the place of the electronic tube in the postwar heating, and improved or modified forms of cooling and cooling equipment all will require improved technique and additional engineering knowledge on the part of the contractor.

Contractor Problems

At the first session on Thursday morning, E. C. Carter, editor, Snips magazine, pointed out a lot of things that contractors are doing to improve their situation, during the present war conditions. He reminded contractors that while the OPA Regulation 241 is out of the picture so far as a job reporting procedure is concerned, OPA still places a limit on the amount of profit which a contractor may take from a job and still requires that the contractor price his job on the same basis as he used before the war. Contractors who are wondering about the prefabricated house after the war should be interested, said Mr. Carter, in a survey made by Airtex which shows that 89 per cent of builders and architects do not believe the prefabricated house will be popular. Furthermore furnace men may not get much work from the prefabricated house builder because accessory equipment quite likely will be bought by the house

manufacturer and will be installed as a package proposition. Surveys indicate, said the speaker, that a large percentage of all new houses to be built after the war will cost less than \$7,000 and probably 80 per cent will be financed by the FHA.

Contractors who are maintaining a steady volume of work from industrial accounts should find themselves in a very popular activity since a recent survey indicates many contractors with one or two or more industrial accounts are depending on such accounts for their bread and butter volume. Other surveys indicate that it is quite possible we will build an average of 700,000 single-family houses each year after the war and to heat these, the warm air heating industry will be pushed to its extreme because the best production year so far has been 525,000 furnaces.

Mr. Carter announced that the new ruling by the State Supreme Court for Illinois declares that the sheet metal or warm air heating contractor is exempt from collection and paying the sales tax on materials. The recently amended Regulation W makes it possible for time-payment contracts to be extended up to 36 months with the first payment delayed until fall.

Mr. Carter cited a number of interesting problems which have arisen recently such as the investigation which discloses in many areas of Illinois it is impossible to drill wells and obtain satisfactory water so that the householder has to depend upon rain water for domestic use. At the present time we do not have enough metal rain carrying equipment to satisfy these areas and we must obtain additional gutter and downspouts. We are also finding, said the speaker, that insulated attics present a ventilation problem to avoid condensation of moisture and the sheet metal, warm air heating contractor may possibly find a surprising volume of work installing fans or metal louvers in attics to eliminate this condensation. Mr. Carter said that a surprising number of contractors are increasing their sales volume through the sale of such accessories as filters, barometric dampers, chimney tops and controls. There probably will not be any changes to speak of in current heating equipment until after the end of the war, said the speaker, but then we may expect to see a number of variations of the so-called airplane heater which burns gasoline or oil and which produces a tremendous Btu output from a very compact unit. Just how these units will be altered to meet requirements of house heating remains to be seen, but is under investigation.

Sheets and the Jobber

Burton L. Wolff, vice president Benjamin Wolff Steel Company, addressed the association on problems of the jobber. He said:

"While it is true that more steel for civilian needs seems definitely to be in the cards, it certainly is not yet in the bag—nor in warehouses for the requirements of sheet metal contractors. One of the things that may be justly criticized in government today is the tangle that the innumerable government bureaus get themselves into with their news releases. Only too often are conflicting statements issued or correct facts misinterpreted by well meaning, but misinformed, news writers. All of us have seen reports which seem to indicate that there is a surplus capacity of steel available, but the only safe way to form any judgment as to their credibility is to check one supposed fact against another, and in that way try to find out to what extent they are in agreement.

"I have personally checked the facts in Washington
(Continued on page 108)

ASSOCIATION

Activities



Florida

S. L. Boyett, Chairman of the Convention Committee, named by President C. E. Brown, gives the following brief outline for the May 19-20 convention of the Roofing & Sheet Metal Contractors Association of Florida.

Welcoming Address—George Patterson, Mayor of St. Petersburg.

Speaker—War Production Board—Tampa Office.

Speaker—From Barrett Company with motion picture of the Big Inch Pipe Line.

Speaker—Tennessee Coal, Iron & Railroad Co., with picture of Steel.

James McCawley, of the United Roofer, is expected to attend and tell of his trip to England.

William (Bill) Davenport, of the St. Petersburg Chamber of Commerce, will address the banquet on Saturday evening.

Other members of the Convention Committee are Otto Krauss, Leo Freiburger, George A. Churchill, J. C. Pressley, and President C. E. Brown.

Room reservations should be mailed to the Suwannee Hotel, St. Petersburg 1, Florida.

S. L. BOYETT, Chairman,
1045 Fourth St., South,
St. Petersburg, Fla.

Chicago—Associated Group

Associated Air Conditioning & Sheet Metal Contractors of Chicago had on their books about 65 sheet metal shops, but when there was no response to notices sent out they were dropped until the membership is now down to the interested ones, to those that pay their dues regularly, attend every meeting, take part in all the activities. All are paid in full, all attend, all work, all receive the valuable information given out. The association has met alternately with the Central Committee in downtown Chicago and their own far south side of Chicago and often there was a 90 per cent attendance at the Central Association. All belong to the new National with their dues paid in full for 1944, besides a substantial sum in the treasury. If one of the members is sick, he receives flowers and visits.

Present officers are:

President—H. M. Daily

Vice President—Erwin Kaulawinski

Treasurer—George Witt

Secretary—A. R. Harris

Association Attorney—Cornelius R. Palmer

The group is planning a banquet for the near future for members and wives.

A. R. Harris, Secretary.

Indiana

The Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., has accomplished a number of worthwhile helps to members during the past two years, with special bulletins to members; assisting members to secure orders; notifying members where materials may be purchased; changes in priorities; instructions on invoicing to save in Gross Tax; divided State into eight Districts, with a chairman in each; helpful annual convention program; notification of changes in Federal and State tax set-ups; distributing valuable WPB information; representing contractor members in the Indiana construction industry; and sponsoring a short course training school.

It is the purpose of the Policy Committee of the Indiana Construction Industry to look after the interests of those allied in the building industry, to devise ways and means

of reducing the Gross Taxes in the building industry. The committee is working on a plan to reduce Gross Taxes from one to one-fourth of one per cent. Thirty-five business men from various allied building organizations meet each month and this combined group is really recognized in the Indiana State Capital. The various Districts are informed to contact their State Senator or Representative on matters of interest. This group works in the State legislature.

The association is sponsoring a Short Course Training School with heating engineer Guy Voorhees to instruct members in the new Forced Air Manual and outline the Warm Air textbook. This course was started on May 5th at the Hotel Antlers, Indianapolis—7 to 9:30 p. m.—and on three succeeding Friday nights. One district sixty miles from Indianapolis arranged to have 15 members in attendance by pooling their gasoline. This course is free to Indiana State members. The instruction covers new methods of figuring gravity and forced air heating jobs. The method of designing warm air heating plants—both gravity and forced air—is boiled down into new, simple, accurate rules which are easy to understand and use in every day work. For non-members the cost is \$5. Some have enrolled from adjoining states.

The Indiana association has added 81 new members during the past six months.

FRANK G. SINK, President.

NWAHA&ACA

The National Warm Air Heating & Air Conditioning Association, of which H. P. Mueller is president, will hold their mid-year meeting at the Stevens Hotel, Chicago, on June 7 and 8.

There will be a luncheon on the opening day in the North Ballroom of the Stevens with "Colonel" Jack Major as guest speaker. Col. Major is a humorist and will tell of his experiences in the Southwest Pacific.

Kalamazoo

The Kalamazoo Sheet Metal Contractor's Association met on April 10 and elected the following officers for the coming year:

President—E. J. French, Kalamazoo Stoker & Furnace Company

Vice President—Glen Rynbrand, Rynbrand Sheet Metal Works

Treasurer—John DeHaan

Secretary—Buck Brundage, The Brundage Company

Coming Conventions

1944

May 19-20—The Roofing & Sheet Metal Contractors Association of Florida. 1944 Convention. St. Petersburg, Suwannee Hotel.

June 1-2—Stoker Manufacturers Association Annual. French Lick Springs, Indiana. Marc G. Bluth, Secretary, 307 N. Michigan Ave., Chicago 1.

June 7-8—National Warm Air Heating & Air Conditioning Association. Mid-Year Meeting. Stevens Hotel, Chicago. Geo. Boeddener, Man. Dir., 145 Public Sq., Cleveland 14.

sound engineering

22 Dravo Heaters replaced Steam Heat successfully ... but enlarge the building 500% ... what then?

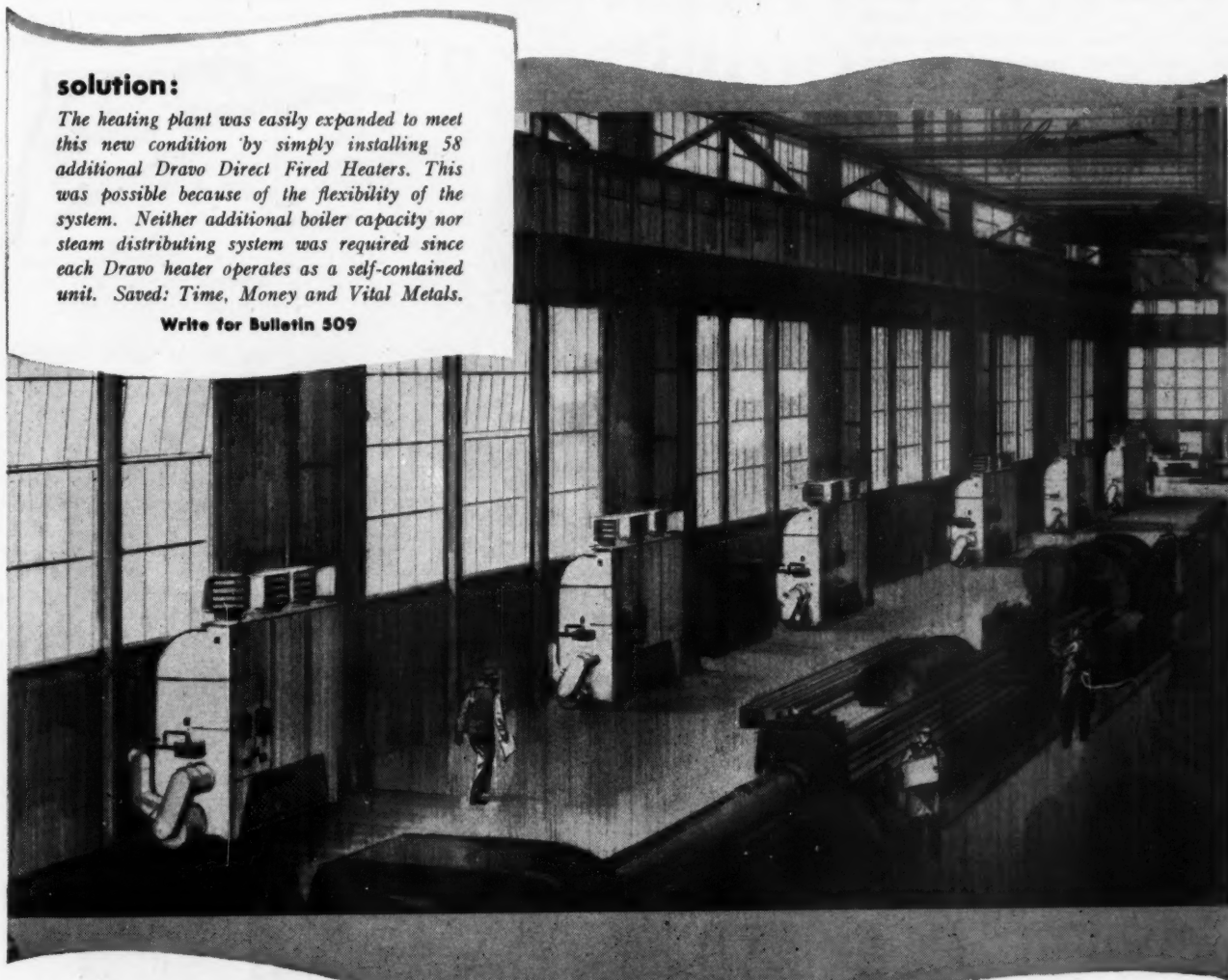
Naval ordnance engineers posed this question in changing an old heavy armament plant to new construction. Full capacity of the present steam boiler was required for processing; leaving no steam for heating. Heat

loss, in enlarging the building, rose from 22,000,000 B.t.u. to 80,000,000 B.t.u. and was further complicated by unusually high ceilings, measuring 74 ft. to the roof trusses. How to heat this huge plant—and quickly?

solution:

The heating plant was easily expanded to meet this new condition by simply installing 58 additional Dravo Direct Fired Heaters. This was possible because of the flexibility of the system. Neither additional boiler capacity nor steam distributing system was required since each Dravo heater operates as a self-contained unit. Saved: Time, Money and Vital Metals.

Write for Bulletin 509



DRAVO CORPORATION • PITTSBURGH



Heating

NEW PRODUCTS

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 89 and mail to us.

△ Indicates manufacturer not listed in 1942 Directory.
● Indicates product not listed in 1942 Directory.

△ 27—Shears

The Famco Machine Company of Racine, Wisconsin, recently entered the production of popularly-priced, foot-operated sheet metal shears.

The new Famco foot-powered squaring shear is sturdily constructed of semi-steel, reinforced and machined. The crosshead is reinforced with a steel tie-rod to maintain proper knife alignment and thereby assure accurate shearing. Compress-



sion springs are encased to practically eliminate their breakage, and knives have high grade cutting tool edges capable of shearing up to 18-gauge mild steel.

High foot pressure is achieved with minimum effort through effective leverage of foot pedal. Five widths are available—22, 30, 36, 42 and 52 inch. The last three are furnished with a "hold-down" attachment to hold the stock in place as it is being cut. All models are equipped with front, back and side gauges.

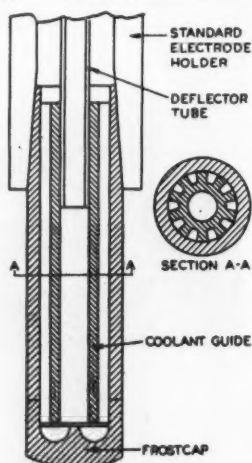
△ 28—Frostpoint

Frostrade Products, 19003 John R, Detroit 3, announces a self-adapting "Frostpoint" spot welding electrode for use with standard electrode holders, eliminating the need for adaptors. The new electrodes provides complete interchangeability with conventional electrodes.

The new self-adapting electrode, though intended primarily for use with refrigerated coolants, also provides better cooling with water.

When the self-adapting Frostpoint is inserted in a standard electrode holder, the deflector tube is engaged by a full-length coolant guide providing a metered flow of the coolant through the internally finned Frost-

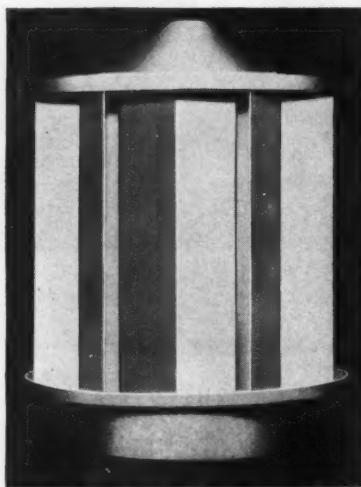
cap. The return flow is through a large number of parallel passages, allowing extensive surfaces of metal to come in contact with the coolant.



Self-adapting Frostpoints are available in $\frac{1}{8}$ -inch and $\frac{1}{4}$ -inch O.D.

△ 29—Agitair Exhausters

Air Devices, Inc., 17 East 42nd St., New York 17, has available a new wind-actuated exhauster suitable for gravity and mechanical exhaust systems in marine industrial and com-

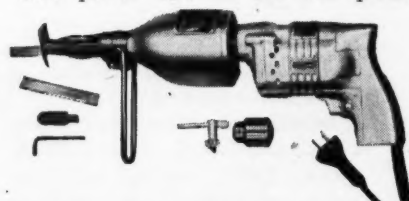


mercial applications. The unit is weather and light-proof and prevents down draft. Agitair ventilators are rigidly constructed and welded.

Many sizes are available. Units with water-tight dampers are made for marine use.

△ 30—Saw-Gun

Mid-States Equipment Co., Saw-Gun Div., 2429 S. Michigan Avenue, Chicago, offers a Saw-Gun attachment for electric drills, flexible shaft or compressed airline, creating a portable power saw or file—for panel

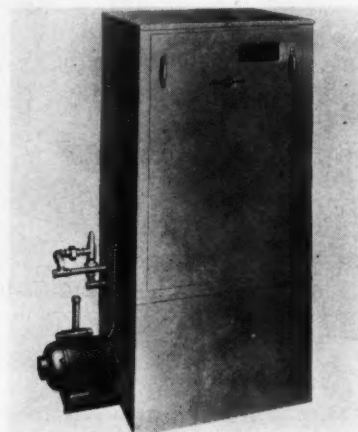


notching, slotting or other fabricating operations in plastics, stainless steel, Monel, corrugated or plain steels in heavy gauges.

The Saw-Gun can be easily attached to drill and is recommended for use on drills with a speed of 2000 rpm.

● 31—Cooling Unit

Airtemp Div., Chrysler Corporation, Dayton, Ohio, announces an air-cooled "package" $1\frac{1}{2}$ -hp. refrigeration unit designed for cooling resistance spot welders and for other specialized industrial liquid cooling service.



The packaged resistance welder cooling unit is self-contained and is equipped with the Airtemp hermetically sealed radial compressor. The unit has a counter flow liquid cooler mounted in the base. An insulated storage tank is equipped with a special $\frac{3}{4}$ -hp. pump, having nominal capacity of 6-GPM. A pressure regulating valve assures flow of coolant at a constant pressure.

WISE FURNACES

POST WAR PLANNING? FOR FURNACE DEALERS



A SERIES

BE PRACTICAL: WIN THE WAR FIRST. Do everything possible to aid the war effort. Let the dreamers have their PIPE DREAMS. Warm Air Heating is not going to be revolutionized over night.

DON'T BE FOOLED: Plan now for the 1944 heating season and for the future. Sell a dependable product, made by an established manufacturer. Experience counts.

1904 to 1944: For 40 years THE WISE FURNACE COMPANY has manufactured quality furnaces. For many more years there will be a demand for quality furnaces. Don't be caught unprepared. Write now for complete information on the WISE AGENCY.

**USE ONLY ORIGINAL REPAIR PARTS ON ALL
WISE FURNACES. BUY DIRECT FROM—**

THE WISE FURNACE COMPANY
AKRON 8, OHIO*

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 89.

230—Maintenance of A. C. Systems

Oakite Products, Inc., 22 Thames St., New York 6, N. Y., features an article on air conditioning in the January-February, 1944, "Oakite News Service." Included are interesting facts on the use of air conditioning in war production, food processing, textile and tobacco plants, hospitals, and for comfort applications, with particular emphasis on effective technique for maintenance.

The article stresses the fact that regular care and attention must be given and presents data on how effective cleaning and related techniques help to solve the problems of scale, slime, odors, and corrosion. A number of case histories are included.

231—Prevent Tire Failures

The B. F. Goodrich Company, Akron, Ohio, has published an informative booklet on truck tire care, particularly timely now because of the critical shortages in this field—titled "How to Prevent Truck Tire Failures."

The booklet has been designed for the truck owner or operator, to acquaint them with the common causes of truck tire failures and point out how these can be prevented by paying attention to some simple rules. It is written in language which the hauler will understand, plentifully illustrated with pictures showing the common causes of failure, and what can be done to forestall their deadly action at a time when every truck tire collapse

before it has given its maximum service is a tragedy.

Pictures and brief text tell a dramatic story under the following subtitles, each handled on one page: "What Happens When Overinflation, Overload and Impact Get Together," "What Happens When a Fast Moving Tire Meets an Immovable Object," "How a Little Tread Bruise Can Grow into a Big Tire Blowout," "What Too Much Heat Can Do to a New Truck Tire," "What a Tread Bruise Begins, Heat Usually Finishes," "How Overloaded Tires Die Before Their Time," "How Overloading Wears Tires from the Inside Out," "What a Sharp Impact Can Do Even to the Best Tire," "How Soft Tires Can Cut Their Own Throats," "How Mechanical Defects Rob You of Rubber," and "Why Duals Should Be Twins."

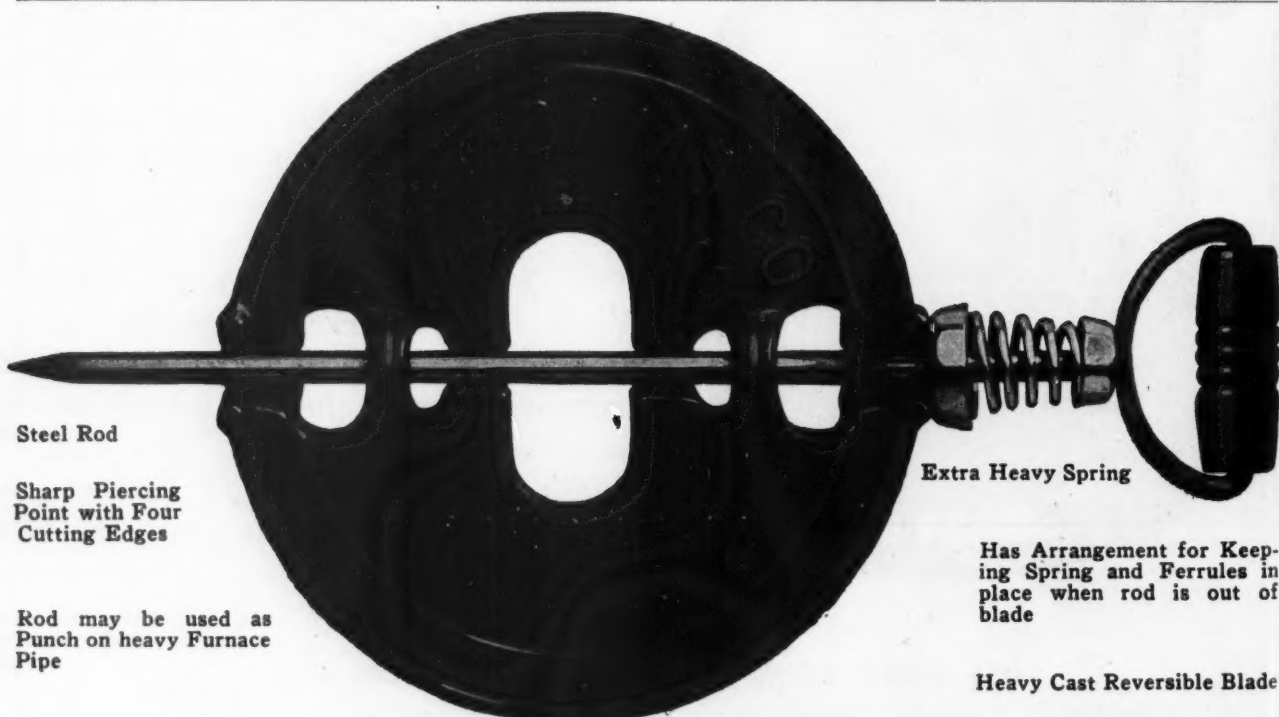
232—Inflation

Consumer Banking Institute, 1025 Connecticut Ave., Washington 6, D. C., has revised a 24-page pamphlet entitled "Inflation, a case history of the inflationary trend in the United States during the past three years of war," for distribution by banks, business concerns, industries and others, under their own commercial imprint.

Believed to be the first "case history" on the subject, and published as a contribution to the home front, it is offered as such by the Institute free to individuals on request. It may be obtained in quantity for the cost of printing by any concern for local distribution provided there is not already a distributor in the community.

The book, printed in color, defines the causes of present inflationary trends and outlines the effects of various government controls to date on the immediate inflationary spiral. In addition it carries a highly informative chart prepared by *Business Week* comparing inflationary trends around the world.

The book explains, in ABC language, the part all must play if the worst forms of inflation are to be avoided. It was written under direction of Dr. John F. Sly, Professor of Government, Princeton University, and Dr. John J. Quigley, Economist, Institute consultants.



Steel Rod

Sharp Piercing Point with Four Cutting Edges

Rod may be used as Punch on heavy Furnace Pipe

Extra Heavy Spring

Has Arrangement for Keeping Spring and Ferrules in place when rod is out of blade

Heavy Cast Reversible Blade

1883 — Sixty-One Years of Service — 1944

ADAMS

DIAMOND SMOKE PIPE DAMPER

MANUFACTURED BY

THE ADAMS COMPANY

DUBUQUE, IOWA, U. S. A.

New Literature

For your convenience in obtaining copies of new literature use the coupon on this page.

233—Repair Parts Catalog

Livingston Repair Co., Marshall, Mich., offers a new Furnace Repair Parts catalog and Victory price list, with suggestions for checking on furnace cleaners.

234—Careyduct Manual

The Philip Carey Manufacturing Co., Lockland Station, Cincinnati 15, is distributing a manual illustrating and describing Careyduct of insulated and sound resisting, fireproof material—both finished and knocked-down.

235—Pipe and Fittings

The Henry Furnace Co., Medina, Ohio, is distributing Catalog GF-44 covering Monerief warm air pipe and fittings. The various items are illustrated and described, with prices and sizes.

236—Fire Doors, Shutters and Hardware

American Sheet Metal Works, P. O. Box 547, New Orleans 1, La., is distributing a 12-page folder illustrating their fire doors, shutters and hardware. Other literature covers their Hoal louvers, Crescent Skylights, roofing caps and ornaments, wall ties, plugs, and channels.

237—Thyratron-Welding Control (GEA-4207)

General Electric Company, Schenectady, N. Y., offers

Publication GEA-4207 covering "Current-Regulating Compensator for G-E Thyratron-Welding Control," with comments on how to eliminate current variations, the Variable-time Method, applications, description and operation.

238—Versa-Tool

York Electric and Machine Company, 1241 West King Street, York, Pa., offers a 4-page folder illustrating and describing the Versa-Tool—a portable power plant that can be changed from a drill to a shear, to a sander or grinder, metal normalizer, screw driver, runner, tapper, etc. Specifications are available.

239—Filter Merchandising Program

The Owens-Corning Fiberglas Corporation, Toledo 1, Ohio, is offering a set of merchandising helps for dealers using Dust-Stop filters; with space for dealer imprint postal cards, newspaper advertisement mats, telephone directory headings, and radio scripts. The program includes also counter and window display pieces.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature."
(Circle numbers in which you are interested):

27 28 29 30 31
230 231 232 233 234 235 236 237 238 239

Name

Company

Address

Are you Manufacturer—Jobber—Dealer—



Do you know DEFINITELY when and how much metal you can get?

Don't wait until you CAN'T get it! Keep a stock of A-R-A Sheets on hand and schedule your jobs to use A-R-A at least for the Duration. You can get A-R-A Sheets now from your local Jobber.

A-R-A Sheets are WORKABLE, easy to cut with a pair of snips, easy to ROLL into round pipe the same as you would sheet steel.

A-R-A Sheets are moisture-proofed, smooth, clean, strong, and attractive neutral color finish, capable of withstanding hard usage. You can depend on every square foot of A-R-A Sheets as being uniform and of the highest quality.

Asbestos clad A-R-A Sheets are tough yet flexible—rigid but not brittle—fire-proofed and water-proofed—will not dry out, crack, crumble, or chip, have a high insulating value (K. .45 B.T.U.) and good sound deadening properties, no metallic rattle.

Write today for the free 16-page illustrated booklet No. 89-A

4101 WEST
TAYLOR ST.

GRANT WILSON, INC.

CHICAGO 24,
ILLINOIS



Here is the package of A.R.A. Sheets that make it the most convenient sheet to ship, stock or carry on the job. The Sheets are always clean and in good condition.

CARTON CONTENTS

20 Sheets 33"x48" Per Carton
40 Sheets 16½"x48" Per Carton

SHIPPING WEIGHT

Approximately 100 lbs. per Carton

SHEET THICKNESS

Approximately 3/16" thick

Get Genuine A-R-A Sheets from
Your Jobber

With the Manufacturers

Postwar Merchandising

The Stoker Division of the Pocahontas Fuel Company Incorporated, 340 East 131st Street, Cleveland, announces a Victory priority selling plan. A lithographed certificate allots a priority number by the factory. All such are issued in numerical order and stoker orders will be filled after the war in the order in which they are received and according to the priority number thus issued.

Pocahontas believes the Victory Priority will give all dealers full opportunity to line up future business now. It puts them in the position to organize a skeleton selling force that can approach prospects, sell them the Pocahontas future delivery idea, and issue to them a Victory Priority and in return receive one from the factory.

A. P. Lamneck Dies

FUNERAL services were held April 26 for Arthur P. Lamneck, Sr., 64 years of age, former congressman from the twelfth Ohio district, and a leader in the coal industry, who died recently of a heart attack while working in his garden. Mr. Lamneck was president of the Cardinal Fuel and Supply Co. for the

last seven years and since 1942 was president of Midland Trail Smokeless Coals, Inc.

He was secretary-treasurer and sales manager of the W. E. Lamneck Co., Columbus, makers of furnace pipes and fittings, from 1907 until 1933, when the firm was reorganized. He was president of the National Warm Air Heating & Ventilating Association.

Francis K. Kernan, President since 1910, of The Bossert Company, Inc., Utica, New York, manufacturer of pressed metal parts, died March 11, 1944. Under his leadership, the company became a pioneer in the art of stamped, pressed, and drawn metals—heavy and light.

Mr. Kernan was a prominent lawyer and active in several lines of manufacturing. He was a director and member of the executive committee of the Equitable Life Assurance Society of the United States, and a director of several other manufacturing corporations.

The officers of The Bossert Company, Inc. are now as follows:

Gilbert Butler.....President and General Manager
Warnick J. Kernan.....Vice President
Peter Guido.....Secretary and Treasurer

William J. Boesch, Superintendent of The Meyer Furnace Company at Peoria, Illinois, passed away unexpectedly following a heart attack, at the age of 49, on April 20.

Mr. Boesch had been associated with the Company for almost 24 years, entering its Engineering Department in 1920, upon being discharged from the U. S. Navy, and had served in various capacities, including assistant superintendent and purchasing agent.

H. C. Thomson, president and general manager of Tanner & Company, Indianapolis, died recently.

Mr. Thomson is survived by two sons—Alex, vice president of the Tanner organization, and Jim now located in California.

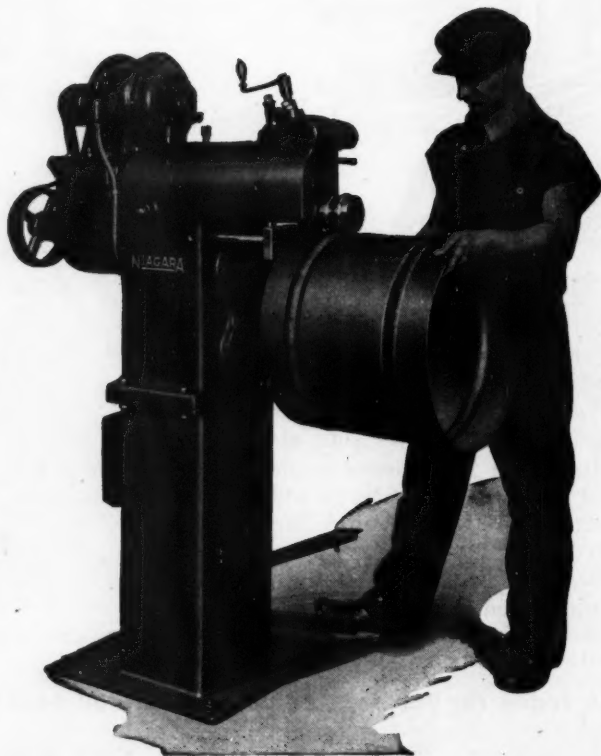
This motor driven combination machine with interchangeable rolls combines power operation, ability to handle heavy gage work, and easy operation.

Foot control of clutch and upper roll allows the use of both hands for holding and guiding the work.

Interchangeable rolls make one machine capable of burring, turning, wiring, beading, crimping, flanging, slitting and circle cutting. Beading and crimping can be done in one operation.

Gears and shafts are enclosed. Gear box contains intermediate gears and clutch, all running in oil. Clutch gives instant hand and foot control and can be locked for continuous operation.

Write for Bulletin 75A. NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y.
District Offices: Detroit, Cleveland, New York.



MR. DEALER:

BUILD SATISFIED CUSTOMERS WITH THIS DEPENDABLE LINE OF **FURNACES**

★ CERTIFIED STEEL FURNACE

A smoke-proof, gas tight, steel gravity furnace specially designed for convenient installation and economical operation. Extra deep firing chamber equipped with heavy boiler-type grates provide for efficient and economical use of coal, coke, or wood. This furnace furnished in either pipe or 3-way construction.

★ BRILLION CAST IRON FURNACE

A complete line of sizes in pipe, pipeless, and 3-way design to meet a greater variety of heating requirements. Brillion furnaces have been widely recognized for more efficient operation and lower fuel consumption by many satisfied users. Only repair parts available—production assigned for remainder of year.

★ MAMMOTH STEEL FURNACE

Mammoth steel furnaces with ratings of 500,000 to 2,000,000 BTU's are custom built to fill requirements for larger heated areas. High primary combustion chamber permits complete combustion of fuels. Easily adapted to oil, gas or stoker, and constructed to give extra years of dependable service.



PLAN NOW ... for Post-war Business

A great deal of emphasis can be put on that word "dependable" when it applies to establishing dealer trade. A dealer's reputation for dependable merchandise and service can establish him as a "first choice" in supplying a peace time demand.

Full representation of our well known established line of furnaces and air conditioning units adapted to stoker, hand firing, oil or gas is now available to progressive dealers who are making post-war plans. Make those plans now for a profitable business by representing products that already have the reputation for dependability.

Exclusive distributorships for post-war sales being accepted now. Write for details.



Stainless & Steel
PRODUCTS COMPANY
1000 BERRY AVENUE
SAINT PAUL MINNESOTA

With the Manufacturers

News Items

Maze Buys Filshie

W. H. Maze Company, of Peru, Illinois, announced the purchase of the Filshie Lead Head Nail Company, of Chicago. The business and equipment of the former Filshie factory has been moved to Peru in the Chicago area.

The Filshie business was founded by the late Alexander Filshie about 1904, and his company was considered the originators of lead head nails. For many years this concern specialized on lead head nails and fasteners of the cast type. In recent years their facilities were expanded to include the manufacture of compressed lead head nails.

Acquisition of the Filshie line gives the Maze Company a complete line of metal roofing nails.

Customers and correspondents of the former Filshie Company will be taken care of promptly and they should address W. H. Maze Company, Filshie Division, Peru, Ill.

Lazo Sales Manager of York-Shipley, Inc.

York-Shipley, Inc., of York, Pa., manufacturers of York-heat, announce the appointment of Victor Lazo as sales manager. Mr. Lazo was for many years sales manager of Pierce-Phelps, Inc., of Philadelphia, distributors of Duo-Therm, Heil, and Chrysler Airtemp heating and cooling equipment.

Plans for post-war expansion by York-Heat are proceeding systematically under Mr. Lazo's supervision. The new York-Heat line of oil heating equipment will be one of the most complete in the industry, and will embrace the builders as well as the industrial and domestic fields.

A. E. Schaab of the Schaab Roofing & Supply Co., Fort Wayne, Indiana, well-known jobber of roofing, sheet metal and heating supplies, died recently.

J. C. Weirman, who with Mr. Schaab founded the firm some 37 years ago, will continue the business.

Obituary

Adolph F. Reese, a director of the Sheet Metal Contractor's Association of Illinois, died in the third week of March from his third attack of appendicitis. Mr. Reese was rushed to the hospital but examination showed that the appendix had ruptured and after lingering several days, Mr. Reese died.

Mr. Reese was one of the best-known warm air heating and sheet metal contractors in the East St. Louis area, and had been a very active director of the Illinois association in his district. He was largely responsible for building up the membership in the State association and did much to cement the goodwill among the contractors in the district. Mr. Reese is survived by his widow who announces that she intends to carry on the business, if possible, under the present name and at the present location.

Charles C. Harstick, 73, head of Harstick Heating Co., Memphis, Tenn., died March 29, at his home, 1638 Union Avenue. He came to Memphis from St. Louis forty-four years ago and in the years since had been prominent in the heating trade—warm air, furnace and steam—erecting several years ago a plant in the up-town section on Adams Avenue. He was a Shriner and member of Lutheran Church. His wife, and a son—Douglas S. Harstick—in the army, survive.

Eli Rysdon, long associated with Lionel Vallas, Chicago, dropped dead recently, although apparently in perfect health.

Martin Armstrong of London, Ohio, a pioneer sheet metal craft man died recently after a short illness.

STRONG... FOR RUGGED WORK RESPONSIVE... TO SKILLED HANDS

Whatever the demand for heavy sheet-metal fabrication there's reserve power in PEXTO Machines and Tools to meet the condition. Mechanical design insures easy handling, with responsive control.



SQUARING SHEARS
MANUAL AND POWER OPERATED

THE PECK, STOW & WILCOX COMPANY SOUTHINGTON, CONNECTICUT, U. S. A.

Increasing Heating Plant Efficiency

(Continued from page 57)

this connection should also be removed and cleaned.

Firing of Coal

The efficiency with which a hand-fired coal heating plant is operated will vary greatly dependent upon the skill of the fireman. There will, of course, be many variations in the correct methods of firing dependent upon the types of coal being used, but there are some generalities which apply to practically all hand-fired heating plants. For example, it may be said that the deeper the fuel bed, the more complete will be the combustion and, therefore, the higher the efficiency.

Care should be taken that as few small particles of coal as possible be allowed to enter the ashpit and from there be removed with the ashes. The grates should be shaken gently at night until the ashpit shows a glow indicating that some combustibles have entered the ashpit, but beyond this additional shaking is unnecessary. After this the firepot should then be filled to take care of the fuel required for the night hours.

If bituminous coal is used, the entire burning coal bed should never be completely covered with fresh coal. If the entire bed is covered, the hot gases driven off from the fresh coal will not be ignited and the heating value of these volatiles will be lost in the chimney discharge. When coal contains such volatile matter, a portion of the coal bed should be left uncovered when fresh coal is added in order that ignition of these gases will take place.

In the morning the preferable procedure is to add a thin layer of coal to the fire and then fill the firepot only after the fire has obtained a good start. After the fire is burning vigorously and has been checked, then the grate should be shaken lightly to rid the combustion chamber of excess ashes.

With stoker-fired heating boilers and furnaces the firing of the fuel is automatically controlled, but some improvement of the firing efficiency may be obtained by manual means. A hooked poker may be used to pull the clinkers to the surface of the fuel bed from which they may be removed by means of clinker tongs. If fly-ash has caked or banked up around the sides of the fire box or combustion chamber, this should be broken down by agitating such portions of the fuel bed with a hooked poker, then with the back of the hook, the center of the fuel bed may be hollowed out by scraping all coal, clinkers, and ashes to the sides of the firebox. Such a procedure will generally improve the efficiency somewhat of a stoker-fired heating unit.

Lower Temperatures

In addition to fuel savings which may be realized by increasing the operating efficiency of a heating plant substantial savings may also be accomplished by modifying the conditions under which a residence or building is operated. Such savings are practically all the direct result of reducing the heat requirements of a structure by various means. Those most easily accomplished are the following:

Inside Air Temperatures

Substantial fuel savings can be realized either through carrying inside air temperatures lower than 70° F. continuously or by carrying these lower tem-



CAST IRON FURNACES

STEEL FURNACES

WINTER AIR CONDITIONERS

OIL BURNERS

BLOWERS

STOKERS

HUMIDIFIERS

TOMORROW

A Larger and Better PREMIER Line—Plus a Great New Dealer Plan

A great new heating market is going to open up TOMORROW — and we're planning now for that tomorrow. We want to give PREMIER Dealers the finest, most complete line of equipment we've ever produced. We also want to give PREMIER Dealers the most helpful cooperation — expert factory assistance with their engineering and merchandising problems.

You can depend on it — when TOMORROW comes, PREMIER will be ready, and you'll be fortunate to have the exclusive franchise for this great line.

Also:

**COOLING EQUIPMENT
REGISTERS
DUCTWORK
AUTOMATIC CONTROLS**

In the meantime, although we are making some furnaces, our production is limited, because we believe it is our patriotic duty to give our main attention to war production, as long as our fighting men need the goods we are making.

PREMIER FURNACE COMPANY
Dowagiac, Michigan

PREMIER

The Year Round Line

peratures during the night hours and periods of physical activity. The amount of saving, of course, is dependent both upon the inside temperature and the number of hours per day during which it is maintained as well as the average outside temperature during the heating season. The percentage saving which will result from the maintenance of a lower temperature is greater in a mild climate than it is in a severe climate. Thus, a somewhat greater percentage saving would be experienced by this means in southern Minnesota than in northern Minnesota. In either case, however, the saving would be sufficient to warrant the carrying of substantially lowered temperatures if the individuals exposed to these conditions are able to withstand them without harm to health.

Table VI
Percentage Fuel Savings Obtained by Continuously Maintaining the Inside Air Temperature Below 70° F.

	Southern Minnesota	District Central Minnesota	Northern Minnesota
Average winter temperature (October 1-May 1)	30° F.	25° F.	20° F.
Percentage savings: 65° F. air temperature	12.5%	11.0%	10.0%
Percentage savings: 60° F. air temperature	25.0%	22.0%	20.0%
Percentage savings: 55° F. air temperature	37.5%	33.0%	30.0%

Table VI indicates the approximate fuel savings which may be expected for southern, central, and northern Minnesota when the base temperature maintained throughout the entire day is lowered from 70° F. to either 65°, 60°, or 55° F. A temperature of 65° F. may be assumed to be approximately the lowest base temperature to which the average individual may

be exposed continuously without undue discomfort or harm to health. The saving to be obtained by maintaining this temperature would range normally from approximately 12½ per cent in the southern part of the state to 10 per cent in the northern part.

Table VII
Percentage Fuel Savings Obtained by Maintaining the Inside Air Temperature Below 70° F. for Eight Hours

	Southern Minnesota	District Central Minnesota	Northern Minnesota
Average winter temperature (October 1-May 1)	30° F.	25° F.	20° F.
Percentage savings: 65° F. air temperature	4.2%	3.7%	3.3%
Percentage savings: 60° F. air temperature	8.3%	7.3%	6.7%
Percentage savings: 55° F. air temperature	12.5%	11.0%	10.0%
Percentage savings: 50° F. air temperature	16.7%	14.7%	13.3%

Table VII shows the approximate savings which may be expected in the southern, central, and northern parts of the state when the temperature is lowered from 70° F. to either 65°, 60°, 55°, or 50° F., for an eight-hour period during the night. Savings of this magnitude may be expected only in case the heating plants were originally properly sized and installed. The exact extent to which night temperatures can be lowered depends upon the adaptability of the heating plant to raising the air temperatures within a reasonable length of time.

When a house is to be left unoccupied for several or more days, it is advisable to lower the thermostat setting to approximately 50° F. Such a temperature will result in substantial fuel savings yet be sufficiently high to prevent any possible damage through freezing.



WHAT FURNACE CEMENT SHOULD HAVE -THARCO HAS!

If you ask the man who works with it, he'll tell you that what furnace cement should have, Tharco has in abundance! The reason?

For one thing, the exclusive Armstrong formula—the result of more than 30 years of close, continuous study of every conceivable furnace operating condition.

For another thing, the careful selection of only the finest materials obtainable, scientifically compounded according to the exclusive Armstrong formula.

Result: Tharco Asbestos Furnace Cement, the first choice of leading furnace manufacturers and dealers who want their installation and repair jobs to be the finest examples of workmanship and long-time operating efficiency!

Tharco Asbestos Furnace Cement "works" easily, provides a high degree of adhesion and heat resistance. Packed in handy on-the-job size containers. Insist on Tharco for every new installation and for every repair job!

Ask for your free copy of the valuable folder:
"The Proper Use and Care of Furnace Cement."

THE ARMSTRONG COMPANY
Detroit Dallas Chicago
241 So. Post Ave. 319 So. Crowds St. 4065 So. La Salle St.

VIKING'S POST WAR PLANNING FILE FOR DEALERS

REPRESENTATIVES

Our plans for peace time expansion offer a limited number of opportunities for post war representation of Viking products. If interested, please write Frank P. Gibbons, Sales Manager.

BEA BLOWER DEALER

**Good money is waiting for smart Blower Dealers after the war
Learn NOW and be ready to cash in when the time comes!**

Here's your chance to get a good start on that good money you can make for yourself as a Blower Dealer. The field is tremendous and it hasn't even been scratched yet. Over 90% of all the homes in Mid-Western cities built before 1922 have deficient heating systems. And over 70% of all the homes in this area were built before 1922. Also, most of the new war-built homes are complete but for forced air. So you can see how really ripe this market is for peacetime pickings.

THERE'S NO COMPETITION FOR A BLOWER

That's the best part of being a blower dealer. With furnaces, you sell coal

against oil or against gas, and then you've got to sell your make against the others. With Blowers, the only selling you do is show the advantages of forced air, and explain that a forced air system can be used with oil, gas, or coal. The Viking material offered here shows you how to do just that, the easiest and simplest way.

HOMEOWNERS ARE ALREADY SOLD ON FORCED AIR HEATING

They should be. They know now that forced air gives them (1) **Correct Air Distribution** in every room (2) **Complete Heating** throughout house (3) **Pure, clean Filtered Air**, without dirt and soot

to get on furniture (4) **Economy and Efficiency**, where they pay less for the same heat or get more heat at the same cost.

VIKING BLOWERS ARE PROVEN EFFICIENT UNDER ALL TESTS

Like a huge vacuum cleaner, the Viking Blower sucks dirty, cold air out of the house and through its filters and then blows the clean, warmed air up through every corner of the house. As an automatic cleaning system, the Viking blower has proven itself efficient and economical. The Viking line because of its wide acceptance and the selling helps available deserve the consideration of every ambitious dealer.

**Send Now for these
Valuable FREE Lessons**

GET THESE NEW IDEAS NOW AND SEE HOW YOU'LL PROFIT

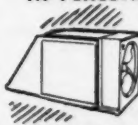
Send today for our valuable "Selling File" and instructive house organ, "The Conditioner." They will help you make good money as a Blower Dealer. No cost, whatever.



Viking



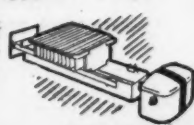
VENTILATORS



ATTIC FANS



BLOWERS



HUMIDIFIERS

IN PEACETIME, PRODUCERS OF:

AIR CONDITIONING CORPORATION • 5600 Walworth Avenue • Cleveland 2, Ohio

★

Dependable HEATERS use
Dependable  OIL CONTROLS



 MODEL 240-U CONSTANT LEVEL OIL CONTROL
 Safely and accurately regulates the flow of oil to gravity type oil burning space heaters, ranges, water heaters and furnaces. Has important fuel compensation features. Manually adjustable or easily converted to automatic operation.

★

● The A-P Dependable Oil Control illustrated above is one of your most vital selling advantages on any oil burning heater. First of all, it's a money-maker, for it is a practical assurance of constant heating satisfaction . . . the kind that means valuable word-of-mouth advertising for the heaters you sell.

● It is well, for your own future profits, to insist that the oil burning appliances you sell come equipped with A-P DEPENDABLE Oil Control Valves.

● You'll probably want to know more about the exclusive engineering features that make A-P control-accuracy possible. Write for Bulletin 428-U.

AUTOMATIC PRODUCTS COMPANY

2452 North 32nd Street, Milwaukee 10, Wisconsin



Most Duct For The Least Material

(Continued from page 62)

blades. These separations must be made to correct size, otherwise the equality of resistance is broken and the whole system is thrown out of balance.

With this system returns can be placed on outside walls. A system with the supplies in the base board and the returns on inside walls must be a high velocity job, so that the supply will "throw" across the room.

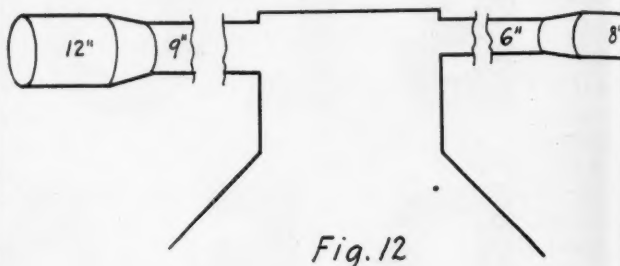


Fig. 12 illustrates a method of converting a gravity to a forced air job, using the old pipes. Loss of temperature is figured from the larger pipes as the velocity is slower, hence the loss greater. Changing from a 6 inch pipe to an 8 inch and from a 9 inch to a 12 inch does not mean 8 inch and 12 inch must be used with 6 inch and 9 inch. The idea is the smaller pipes coming off the furnace must be correctly sized and must exceed in length three times their diameter. By making our take off pipes the correct size we "meter" the required volume of air from the plenum and eliminate the need for obtaining volume by dampering.

Wisconsin

Apprentice Standards

(Continued from page 67)

- as to the apprentice's progress, conduct, interest, schooling, and so forth.
7. You will be required to carry out the intent and purpose of the Wisconsin Apprenticeship Law governing the serving of an apprenticeship and school laws pertaining to the employment of an apprentice.
 8. Your apprentice, in order to be recognized, must be indentured and the indenture must be approved by the Industrial Commission.
 9. The Local Joint Sheet Metal Apprenticeship and Training Committee may reject the apprenticeship application of any master sheet metal worker, firm, partnership, company or corporation against whom an unsatisfied judgment, lien, wage claim or receivership is pending, until said committee is satisfied that proper disposition has been made thereof.



A camel would have felt at home in this drop forge plant

Until Allen Engineers Took Over...

IN THIS huge structure of the Lindell Drop Forge Company, Lansing, Michigan, under-roof temperature in summer regularly hit 170° to 190° Fahrenheit. Floor working temperatures upward of 120° prevailed. O.K. for camels—tough on men intent on high production. That's how things stood when Allen got the nod to see what could be done about it.

Allen men, wise to the ways of air movement, thoroughly studied the situation, submitted a recommendation based on an objective of complete air-change once a minute. The

Lindell management approved and Allen moved ahead. Seven 60 inch cowl ventilators that had been loafing on the job came off pronto. Equally fast, with the cooperation of local sheet metal men, seven 54-B Type "H" Allen Roof Fans went onto the ridge.

Result: complete satisfaction. With 60 air changes an hour, floor working temperatures moved down within reason. And incidentally—fumes and smoke that had been troublesome took to their heels along with the excessive heat.

This is just one case in point, Allen engineers have licked a good many tough ones. The reason is three-fold: experience, the right attitude, the right equipment. They take on ordinary or extraordinary ventilation problems with equal facility. If you have excess heat, dust, fume or moisture conditions, Allen men are ready and willing to take a look-see and tell you what you can do about it. And if you want it done—Allen has the proper gravity and/or power ventilation equipment to do the job and do it right. *The Allen Corporation, 9751 Erwin Avenue, Detroit 13, Michigan.*

THE *Allen* CORPORATION
ENGINEERED VENTILATION FOR INDUSTRY

New York Convention

(Continued from page 81)

Welding

A very interesting welding demonstration was presented by J. S. Roscoe and E. L. Smith, of the Lincoln Electric Company, Cleveland. Mr. Roscoe pointed out the very important part now being played by welding in the production of war items, welding being used in practically every weapon we are now using. The very important improvement in welding technique and welding machines has come about because of war requirements, resulting in machines which will now hold a steady arc at five amperes. There are also new devices which now control the welding current, other devices which vary the temperature so that the welder can start cold at a small amperage and end without creating any crater due to high amperage and high temperature. Another interesting development is the bifocal hood which permits seeing a low amperage arc at the start with a dark colored lens for final welding.

Back New National Ass'n

At the annual business session of the association President Patrick Varden was re-elected for 1944, and reported some of the activities of the new Sheet Metal Contractors National Association. Mr. Varden emphasized the need for such an association and pointed out that in order to be of maximum service, such an organization needs money on which to operate. Mr. Varden summarized some of the various meetings which have occurred to date and appealed to members

to attend the first annual convention to be held in Chicago April 27 and 28 at the LaSalle Hotel. Mr. Varden also emphasized that whereas many members seemed to feel that a very large membership and very low dues is the most representative association, the experience of the officers and directors to date has been that it is not possible to get several thousand of members at a low dues rate, so the alternative seems to be to increase the dues in order to bring in the necessary funds to employ a full-time paid secretary and to accomplish the various aims which the association strives for.

Mr. Varden suggested that because of the pressing need for money to organize and get started it might be a good idea for contractors to underwrite the first year's expense. Following this suggestion, seventeen members at the business session agreed to contribute \$575 as an underwriting. This money has no relationship to annual dues. If sufficient money is obtained by underwriting, explained Mr. Varden, then it will be possible for the association to employ a secretary, to outline a definite program of aims and needs, and to have satisfactory representation in Washington and to establish the various programs necessary for the industry protection after the war. As an example of what can be done if funds are secured, Mr. Varden pointed out the present problem in Albany where sub-contractor bids are being peddled by general contractors and only some form of control similar to the bid depository probably will eliminate this headache.

Director H. A. Daniel of Newburgh said it seemed a shame that employers could not see their way clear to contribute as much money to their National Association as the mechanics they employ contribute to

(Continued on page 101)



Out of the Desert:

the principle of Artic-coolness through evaporation

The ancient Arabs used porous skin bags to cool water by evaporation. The Palmer Manufacturing Corp. has spent over thirty years perfecting the principle of evaporative coolers for the home, and manufacturing coolers, in the desert of Phoenix, Arizona.



FROS-TAIRE

COMFORT COOLING

is the name of the modern miracle cooler by Palmer that is bringing comfort to the homes of thousands of essential workers, military personnel, and invalids. Available in horizontal, upblast and downblast, all types and sizes. 2500 CFM to 30,000 CFM.

WRITE FOR PRICES AND PRIORITY INFORMATION!

Palmer

MANUFACTURING CORP., PHOENIX, ARIZONA

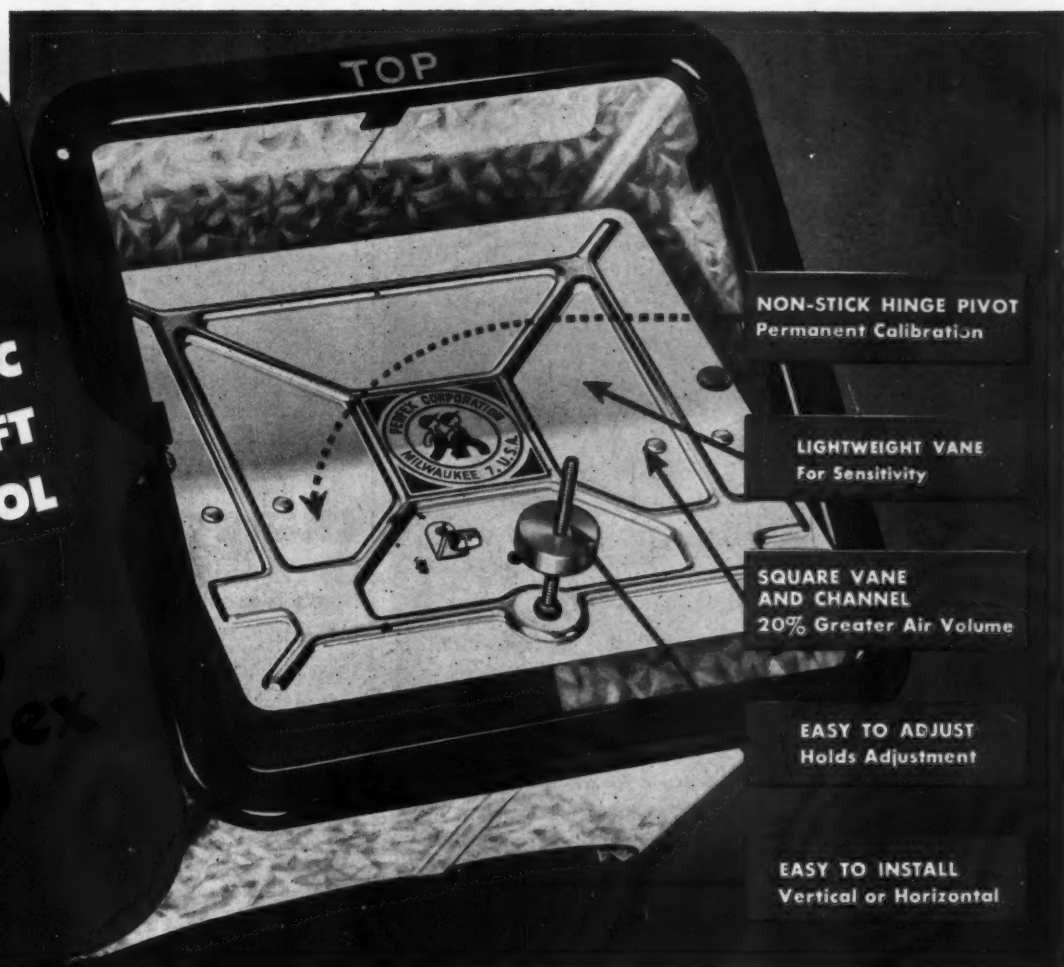


Horizontal
Model

Yours now . . . TO SAVE FUEL

The BAROMETRIC DRAFT CONTROL

by *Perfex*



Here is a dynamic volume item that saves *volumes* of fuel. Installed during the next few months it will go to work—efficiently, dependably—to help meet the fuel crisis. Fuel conservation is a national problem—but it must be solved locally, building by building. Every building in your community equipped to cut fuel waste *where fuel waste occurs*—at the heating plant—will contribute mightily to the national fuel-saving effort. Write today for pertinent information on this soundly-engineered barometric draft control.

*Fuel-Saving
Starts With*
CONTROL



Perfex CORPORATION
421 WEST OKLAHOMA AVENUE
MILWAUKEE 7, WISCONSIN

ACHIEVEMENT



that challenges future effort

Promises are just promises unless kept; but performance is history. That's why we are proud of our Army-Navy "E" award. It expresses Uncle Sam's recognition of our contribution to this nation's production record . . . a performance that will live in history. As such, our "E" is not only a symbol of a vital job well done but an inspiring challenge to the men and women of General Controls. ★ We pledge ourselves to continue giving our best, and more, to produce Automatic Controls for America's needs. Today, tomorrow and until "V" Day, we will continue to earn our "E" by performance.



GENERAL CONTROLS
 Wartime Manufacturers of
 Electro-Magnetic and Tem-
 perature Controls for Aircraft
 Peacetime Manufacturers of
 Automatic Pressure Tem-
 perature, and Flow Controls
 801 ALLEN AVENUE, GLENDALE 1, CALIFORNIA
 BOSTON • NEW YORK • PHILADELPHIA • DETROIT • CHICAGO
 CLEVELAND • DALLAS • DENVER • SAN FRANCISCO • ATLANTA

Pilot's seat
 manufactured by
 Plastic
 Fabrications Co.,
 Los Angeles

RIVET THIN PLASTIC THE EASY WAY



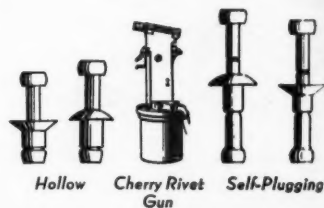
with CHERRY BLIND RIVETS

Here's a product made of thin plastic and held together with Cherry Blind Rivets. There are no blind spots in this structure but Cherry Rivets are used because they reduce spoilage and are easy to apply.

Cherry Rivets make ideal fasteners for pliable or brittle material. There's no hammering on rivet heads—no bucking bar needed. Rivets are headed by a pulling force. They have high shear and fatigue values—are applied much faster than conventional rivets.

Get the complete story on Cherry Rivets now. They can save you time, money and a lot of trouble on tough riveting or fastening jobs.

Cherry Blind Rivets are made with brazier and countersunk heads in both hollow and self-plugging types. Gun pulls mandrel into rivet, forms head on blind side.



WRITE FOR HANDBOOK A-43—
 Tells all about Cherry Rivets and how to use them. Address Department A-200, Cherry Rivet Company, 231 Winston Street, Los Angeles 13, California.

Cherry Rivets, their manufacture and application are covered by U. S. Patents issued and pending



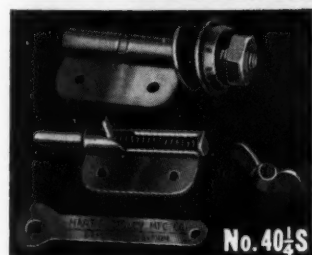
the operation of their union. Necessary funds for proper operation, suggested Mr. Daniel, can be obtained partly by dues and partly by flat contribution until such time as the association is permanently under way. There is no reason why manufacturers should not contribute to this expense because, reminded Mr. Daniel, in the final analysis the contractor is the individual who enables the manufacturer to stay in business. Our industry, because of the lack of a national voice, has permitted general contractors and architects to set prices and dictate specifications. There is no remedy for this condition until such time as a national association establishes standards of bidding and standards of installation.

According to the secretary and treasurer reports, the New York association is in an excellent financial and membership condition. The association has been active all through 1943, maintaining a constant flow of bulletins to members, and anticipates an even more important 1944.

The association's annual banquet was a most enjoyable affair with a very interesting toastmaster and an excellent speaker (Robert C. Simmons) who discussed some humorous phases of postwar planning. The Merchandisers' Association tendered an evening party to the members of the association.

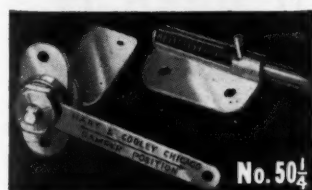
The Merchandisers Association reported that resignations, inability to serve, and demands of the Army and Navy have made great changes in the membership of the Auxiliary. None-the-less, the auxiliary now has 52 paid members and expects, in 1944, to further the interests of the industry and to contribute substantially to the activities and support of the contractor members of the New York association.

H&C DAMPER REGULATOR SETS



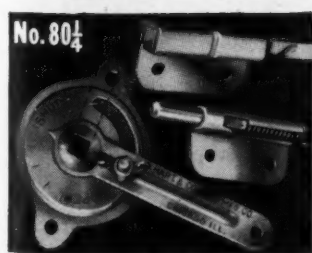
ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with 1/4" bearings.

LIST PRICE.....No. 40 1/4 S.....\$0.30



BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on 3/8" size. Each set individually packaged.

LIST PRICES.....No. 50 1/4.....\$0.40
No. 50 3/8.....\$0.60



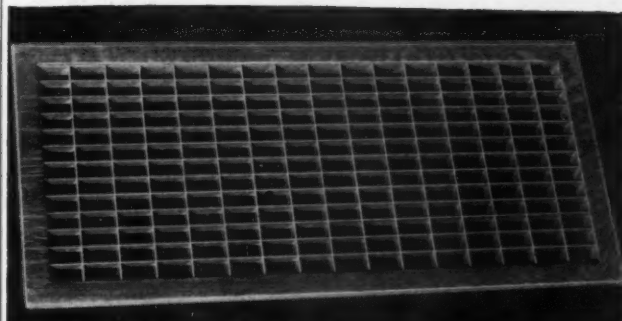
DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on 1/4" size, Solid Bearing on 3/8" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 1/4.....\$0.40
No. 80 3/8.....\$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICHIGAN • CHICAGO OFFICE: 61 W. KINZIE ST.

ALL YOU NEED FOR ESSENTIAL REQUIREMENTS



H & C No. 265 Return Air Face

Perfect for Maintenance and Repair!

Like all of our most popular gravity and air conditioning items, No. 265 "NO-FLEX" Return Air Face is being manufactured and is now available from stock.

This doesn't mean that we can furnish unlimited quantities—our C.M.P. allotment will not permit that—but it does mean that we can make prompt shipment of all current essential needs.

No. 265 with its clean-cut, attractive appearance, sturdy duct-concealing construction and safe walking surface, is the ideal Return Air Face for maintenance and repair. It costs no more than others; and consequently it's a better buy for both you and your customers.

Other items now available: Nos. 210, 130, 330, 623, 653, 250 and A.C. Designs Nos. 69, 74, 75 and 88. Also complete accessory line.



HART & COOLEY MANUFACTURING CO.

**World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN**

Amendments Interpretations

(Continued from page 50)

of the appropriate War Production Board District office on Form WPB 1319. *The dealer may deliver and the installation may be made without approval from any source, if the burner to be replaced is over ten years old, or has actually broken down and is beyond repair during the season in which it is in use. No installation may be made for replacement unless the installer arranges to have the old burner scrapped or dismantled, but this requirement does not mean that the installer is entitled to take the old burner without the owner's consent or without crediting him with its value.*

(4) *Burners assembled in other products.* If the War Production Board has approved the delivery of a Class B oil burner on Form WPB-1319 for physical incorporation in or assembly with another product, such as a water heater, *further authority under this order is not required for delivery of the assembled unit, but the restrictions of L-79 (prohibiting delivery except to fill a rated order) must be complied with.*

(6) *Oversea shipment.* Any dealer or distributor may deliver a Class B burner to fill a rated order for shipment to a foreign country or a territory or overseas possession of the United States.

(d) *Restrictions on sale of Class A and Class C oil burners:*

(1) *Class A oil burners may be delivered only on orders bearing a preference rating of AA-5 or higher.*

(In case of a new installation in the continental United States, application for preference rating must be accompanied by copy of authorization from the Petroleum Administration for War, permitting the delivery of fuel oil.)

(2) *Class C oil burners may be delivered without a preference rating. (However, authorization for delivery of fuel oil must be obtained from the Petroleum Administration for War in accordance with its order PDO-130.)*

Third Quarter Steel Cuts

THE federal government, through the WPB, "is preparing to limit steel allocations for claimant agencies of the government for third quarter," according to the magazine Steel.

This decision resulted, the publication adds, from an expected mid-summer cut in steel production because of hot weather and "probable loss of considerable manpower by the draft."

"Requests of the various agencies," it continues, "will be closely scrutinized as demands are expected to continue heavy and production in third quarter may taper, some conservative observers predicting a decline of 7 or 8 per cent."

Steel reports metal for certain types of bombs involves many "thousands of tons."

"Activity is being increased in other products, landing mats, containers, chemical warfare items and amphibious craft," the magazine says.

Steel reports a gain of one point in national steel-making operations last week to 99½ per cent of capacity.

DIRECTHERM DIRECT-FIRED UNIT HEATERS



GIVE FLEXIBLE HEAT

WHERE, WHEN, AND HOW YOU NEED IT

For permanent or temporary, for additional or emergency heating. Can easily be moved to other rooms or buildings. Automatic controls prevent heat-wastage. Direct heat outlets save fuel. Powerful blower spreads heat evenly without draft. May we give you detailed information on this flexible and economic way of heating?

**AIRTHERM
MANUFACTURING CO.**

706 SOUTH SPRING AVENUE, ST. LOUIS 10, MISSOURI

Sheet Metal Cont'r's Nat'l Ass'n

(Continued from page 79)

which we enjoyed prior to the war, we must make dead certain that we will give the home owner the comfort we have talked so much about. We may expect the public to ask what about panel heating, new types of furnaces which can be stowed away in a closet, electrical heating, and all the many gadgets and ideas which have been advertised to the home owner during the war period. We must be in a position to convince this home owner that the type of heating we are offering and which we have offered in the last few years is in reality, the very latest and most advanced type of indoor comfort it is possible to buy. We must continue to sell the public on the fact that only with warm air heating can the home owner buy with assurance the various comforts which he anticipates, namely: accurate, close temperature control; relative humidity of almost any desired percentage; cleanliness of all the air circulating in the house; ventilation through air circulation; and allied purification and sterilization of the air. If all these advantages add certain definite costs to the overall price of a heating system, our industry will be confronted after the war with the need to convince home owners and architects that more of the building dollar should be spent for heating than has been spent heretofore. We must be prepared to ask for ten per cent of the building dollar for heating and indoor conditioning in place of the former five and six per cent. Finally, suggested the speaker, our industry in co-operation with manufacturers must

not permit warm air, air conditioning to be confused with just plain heat. We can offer warm air, air conditioning—no other industry can offer comparable air conditioning at the price we submit—but it will be necessary for us to repeat over and over again this simple fact which we all understand but which the public does not appreciate.

Reports and Addresses

In his address of welcome, opening the convention, President Clark briefly summarized several of the meetings held previously and said that he hoped the convention and the delegates would bear in mind that the association has a big job to do to make the association a recognized voice in National affairs. We can do the job necessary, said Mr. Clark, if we all pull together so that small contractors and big contractors will all feel that they have a voice in the National association and that the association is interested in everyone's problems. Already, reminded the president, the association has had some small recognition from Washington agencies concerned with particular problems of surplus materials, manpower, fans and blowers. Since only a start has been made in such matters relating to Washington problems, it can be anticipated that as the association grows in numbers and becomes organized to promote its requirements in Washington, this recognition will grow. As a suggestion for accomplishments to be expected at the first convention, President Clark reported that the Board of Directors believes a full-time secretary is an answer to many problems of organization; that a change in the fiscal year from January to January as it now stands to May to May would be an advantage; and that the association must co-operate with all agencies having anything to do with obtaining and holding work for our

Syncromatic Steel Furnaces Satisfy All Three

FIRST in
Performance
Economy
Ruggedness

1. For the Jobber . . .

A complete standardization of all parts for all five sizes for repair and replacement to simplify stocks. A complete co-ordination of gravity and blower units to avoid multiple stocking problems. A product that gives both premium performance and neat appearance.

2. For the Dealer . . .

Merchandising value based on fuel savings, performance and excellent styling, all at no extra cost.

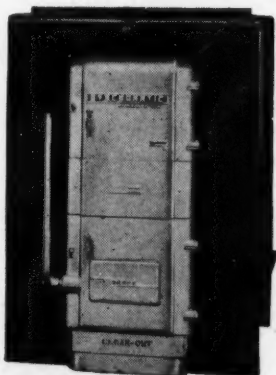
3. For the Home Owner . . .

For the next twenty years a good investment, fuel saved, a warm home, all due to modern design and engineering with that non-premium extra-neat appearance.

Syncromatic Corporation

3373 N. Holton St.
Milwaukee

FIRST in
Beauty
Compactness
Simplicity



trade. That the convention did accomplish these things is indicated in the preceding report.

Secretary Meyer read the minutes of several previous meetings reporting that at the first meeting, eighteen months ago, seven states were represented; at the second meeting fifteen states were represented; at the opening of the convention, there were approximately 300 paid members and there have been collected during the year preceding some \$2,500 in dues, with a balance in the treasury at the opening of the convention of \$1,250. The secretary's office mailed almost ten thousand letters and mailing pieces throughout the country during the preceding year.

Jurisdictional Awards

Mayne Stanton, of Associated Builders, Chicago, in discussing jurisdictional awards reported that as a result of a very close co-operation between employers and union employees in Chicago, labor conditions are in the most favorable condition during the past twenty years. Much of this excellent progress stems from the organization of the Chicago Building Trades Council in 1909, branching into the Employers' Association—formed in 1911, and resulting in a joint arbitration board established in 1923. As a result of this co-operation, there has been no strike in the sheet metal trade in Chicago in the past sixteen years. It is becoming evident, said Mr. Stanton, that already some trades are grabbing work now done under temporary awards by other craft, hoping that such work will be awarded the expecting trade after the war. One of the problems which sub-contractors and general contractors—employers and employees—must fight after the war is the Jerry builder who produces structures not up to standard codes. A second prob-

lem all the construction industry should give attention to as soon as possible is the preparation of some plan which will encourage people with savings to put their money, after the war, into new houses or modernization of present structures. If such a program is instigated, it will insure a continued prosperity in all the building trades after the war.

Priority Regulations

C. R. Bennett, Chicago WPB, reported that materials are getting easier and that there is some lessening in the critical problems of war production; materials should be easier as the war progresses, and their should be more materials for civilian production. There is today, no grave unbalance in the materials production and supply picture, but Mr. Bennett warned that this situation might change if the armed forces suddenly proposed a greatly increased program of some type of war equipment. As to WPB regulations, Mr. Bennett said there are in force at present almost ten thousand regulations of one kind or another—fortunately only a few of these affect the warm air heating, sheet metal industry. For instance, L-22—controls furnace production—and while the contractor has not had all the furnaces he would like, we have not been treated too badly. L-74 continues to prohibit the manufacture or sale of residential type oil burners and so long as the acute condition exists in fuel oil and gasoline, there may be expected no relaxation in the oil burner order. Blowers, at the time of the convention were still under L-123, but during the period of the convention, L-123 was revoked and L-79 was amended to place furnace fans of 16-inch-and-under diameter under L-79 and permit sale without motors on priority ratings of AA-3. This is explained in this issue. L-79 still permits the manufacture and installation of

Beach party
1944



No picnic, this! . . . but a grim game of kill or be killed on enemy shores. While the fighting rages, PAYNE must bend every effort to help win. But after victory, we'll turn again to furnaces, featuring . . .

Payne ZONE-CONDITIONING

Post-war successor to old-fashioned central heating. ★ Healthful circulation of fresh air, gas-heated in winter; cooling, refreshing in summer . . . controlled by zones or individual rooms. ★ Meanwhile, let's back our boys on the beaches with everything. ★ Let's buy more Bonds.



PAYNEHEAT

NEARLY 30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC.
BEVERLY HILLS, CALIFORNIA

U. S. ARMY SIGNAL CORPS PHOTO.

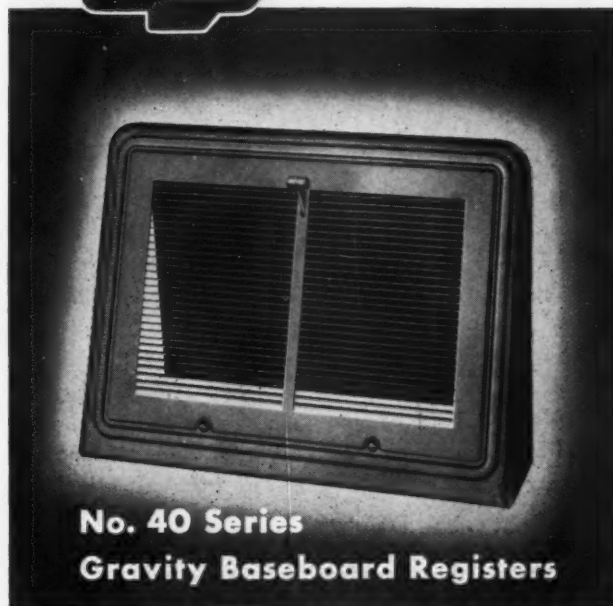
stokers of a capacity above 60 pounds per hour in industrial, commercial and apartment buildings, but continues to prohibit the manufacture and sale of residential size stokers. Mr. Bennett further suggested that the industry acquaint itself more thoroughly with Order L-41, which controls the installation of equipment in new housing construction; also with CMP-9-a which defines a "repair man" and permits the use of certain specified quantities of materials for repair, modernization and replacement. Finally, Order PR-13 covering surplus materials is just now becoming an important order and will be of more use to us as surplus materials accumulate in inventory.

War-Time Solder

Walter P. Dumper, L. B. Allen Company, Chicago, speaking on solutions to war solder problems, said the whole situation began when the importation of tin was stopped right after Pearl Harbor. With the stoppage of tin, solder formulas were changed to use as little as 13 per cent tin, 2/10 per cent of silver and the rest lead. This war-time solder with small variations continues to be a headache to the contractor who expects to use war solder just as he used 50-50 solder. The proper flux with war solder is one solution to the problem and a second solution comes from the use of hotter irons or higher soldering temperatures. The use of gas-fired soldering irons to give higher heat has been used advantageously by many contractors. The use of larger irons has also helped considerably. One simple solution, which is frequently overlooked, is the redesign of joints to make the mechanical joint stronger without depending upon the solder and the pretinning of the edges of the joint, so that the flow of the solder is not more than $\frac{1}{4}$ inch. Trying to sweat joints one to two inches deep with war-time solder is almost an impossible job, said the speaker. War solder has brought into being the problem of fume hazard because lead fumes are toxic, but this in turn has led to additional work for many contractors in designing and installing soldering fume removal benches and systems. Finally, said Mr. Dumper, many contractors have gone back to the use of soldering machines and the dip process as a means of obtaining satisfactory solder joints.

Sterilization of Air

The sterilization of air in heating and ventilating systems was discussed by George Payton, Westinghouse Electric & Manufacturing Company, Chicago. Mr. Payton graphically showed how light is broken up into the various bands which are radio active or ultra-violet, or heat producing, and pointed out that there is a wide light band with germ killing characteristics. This band is in the lower range of the ultra-violet and the light can be produced by a very inexpensive tube. This tube installed in a room or in a ventilating duct will completely kill all germs in the air which pass within view of the tube. The number of tubes required in a given system, according to the volume of air passing through the system, has been calculated and can be quickly determined by consulting graphs which have been prepared. These sterile lamps have many interesting characteristics, for example, they will age beef in 48 hours in place of the natural aging requiring 42 days. They will protect bread until the bread is hermetically sealed in a wrapper. In ventilating systems, these light tubes will decrease the bacterial count of the air by 98 per cent. There is no limitation to the air quantity which can be passed by a suitable number of tubes. As a suggestion for post-



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Beauty
HIGHEST EFFICIENCY ★

Every desirable Feature of Advanced Register Construction is embodied in the U. S. 40 Series Baseboard Registers.

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Neatest and Most Modern of Baseboard Register Designs, Two-Piece Construction with Removable Center and Engaging Buttons—No Loose Screws. Attractive Dignified Metalac Finish.

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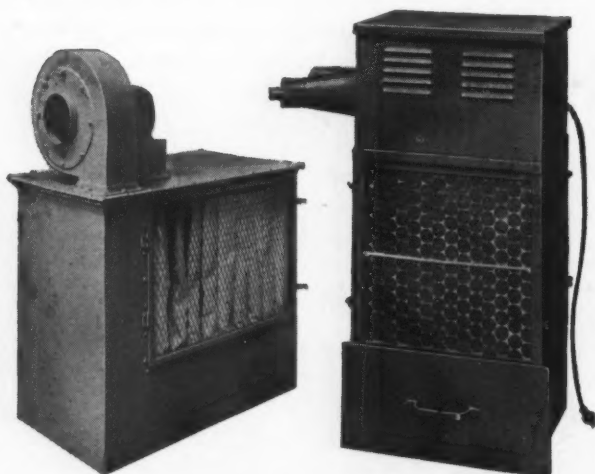
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war activity, Mr. Payton pointed out that such tubes will kill cold germs and accordingly can be used in schools, factories, homes, or in any place where people congregate and where germs are conducive to absenteeism or sickness, etc.

Warm Air Heating Controls

R. H. Warmee, who had intended to speak on the subject of "Controls for Warm Air Heating and Ventilating Systems" said that after listening to the excellent program and watching the progress of the convention, he had decided to tear up his speech on controls as inappropriate—and he did so on the platform. Then Mr. Warmee said that he had been very much impressed by the program and the association and said he would like to point out that the purpose of any association is to weld all together all the good ideas which came from any group of individuals. Such a welding together results in a strong, active association.

Associations, today, said Mr. Warmee, can do one thing highly necessary in a war economy—that is to stabilize and encourage home front morale because home front morale is highly essential today and will be of vastly increased importance after the war. If we maintain during the war and afterwards a strong home morale, we have little to fear for the post-war era; a great future for all America is assured if our morale is sustained. Associations can play an enviable part in this maintenance of home front morale because when all is said and done associations represent a very typical American activity. It is in associations that American business men gathered together to promote their interests; to discuss mutual problems; to foster and advance a given industry; and to find out that the competitor is not the wolf he is sometimes thought to be but is just another man trying to get along in business. These are the very things our men are fighting and dying for.

The challenge which today confronts every individual man in business and every individual industry and every association is to find time now to plan wisely for the post-war era in order that the things we are now fighting for will be assured when the war is over. We should plan in terms of work and jobs and ideas, said Mr. Warmee. Let every man in business plan how he can give one extra man a job after the war is over.

Entertainment

The two interesting luncheons with speakers have been described previously. At the end of the first day's session, a hospitality room was opened to members and guests with refreshments, a quartette, a piano, and plenty to drink. Ladies were invited to the hospitality room with the result that a very pleasant two-hour period was enjoyed by all.

The concluding feature of the convention was the Friday evening banquet, for which some three hundred tickets were sold and to which almost three hundred men and ladies attended. The crowd almost filled the hotel's huge ballroom and the pleasant dinner with interesting entertainment was a fitting climax to a very successful convention.

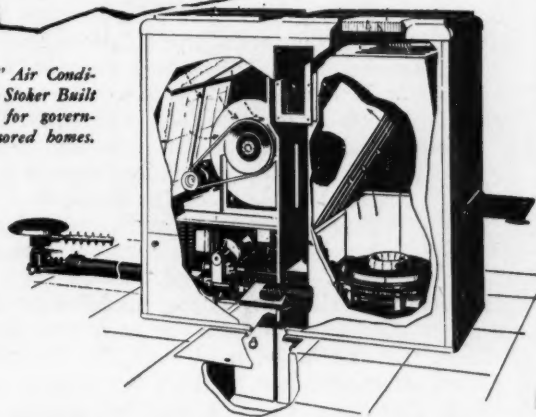
No report would be complete without a reference to the members of the Convention Committee, particularly R. H. Guenther, chairman, J. H. Ebbert, treasurer, and Lou Reining, secretary, and the various chairmen and committee members who gave unstintingly of their time to prepare the program and make the convention a success.

MILLIONS ARE READING THIS MESSAGE

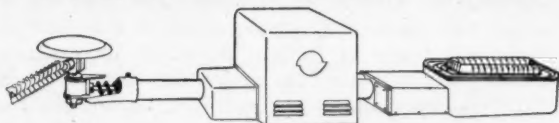
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A remarkable stoker already used by thousands of home owners—fits into any furnace or boiler. Manufactured for over 9 years. So automatic that it takes coal from your present coal bin, going around corners if necessary, feeds it to the furnace, burns it as demanded by a thermostat located in the living quarters of your home, and empties the ash into a sealed container. There is no coal to shovel, or clinker to dig! Made in several sizes... If you are planning to build a home in the future, choose the complete Air Conditioner, which has this automatic stoker built in. Send for full information on how you can be sure of an early delivery of a Pocahontas Automatic Stoker after the war.

The "O. P." Air Conditioner with Stoker Built in—Ideal for government-sponsored homes.



A GOOD MARKET NOW... A GREATER MARKET LATER!



• We are looking for stoker dealers who want a stoker line that's exclusive now and after the war. A great national advertising campaign is telling the Pocahontas Automatic Stoker story to millions.

Today you can sell the Class "A" Pocahontas Bin-Feed Stoker to users of 25 tons and over! Later, when domestic sizes are released, you will also have the famous Pocahontas Bin-Feed, Ash-Removal Stoker—the only stoker of its kind on the market. Thousands already in use. Write today for full information.

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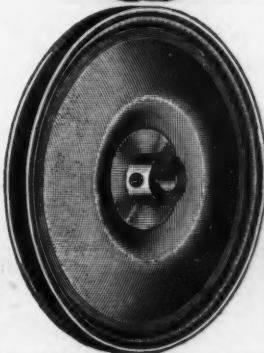
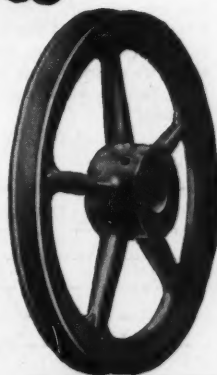
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provide a L-O-N-G step toward
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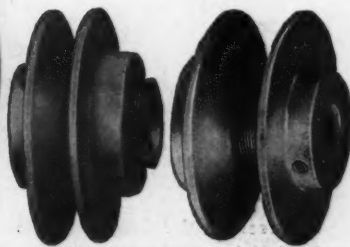


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BLOWER-FILTER package unit

The LAU 400 Series BLO-ETTE

400 SERIES BLO-ETTE ASSEMBLY
(Five Sizes)



A complete package in attractive streamlined casing that combines all the sturdiness, efficiency, quietness of our larger units. Low priced—result of large assembly-line production. Delivery on acceptably rated orders.

BLO-ETTE Features in a Nutshell

- Shipped assembled . . . will go through any door.
- Large size access door . . . easy to get to the motor or filters.
- Pulley belts easily changed.
- Cold air return easily fitted into top of unit.
- Automatic cut out motor.
- Top motor mounting. Keeps motor away from floor moisture. Permits more compact housing.

SPECIFICATIONS

Unit No.	Furnace Size	C.F.M.	H.P.	No. of Filters
400	18"	850	$\frac{1}{8}$	1
401	20"	1000	$\frac{1}{8}$	2
403	24"	1250	$\frac{1}{4}$	3
404	28"	1680	$\frac{1}{4}$	4
405	30"	2150	$\frac{1}{2}$	4

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Engineers and fabricators of general Air Handling Equipment
Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories

Illinois

Convention

(Continued from page 83)

and with mill sources. What I now have to report on sheet production and warehouse stocks is very near to what I believe can be called the bare and unvarnished truth about the steel you need for sheet metal jobs.

"Within the last six months, production of galvanized sheets has been increased 80%. How low production of your basic fabricating material actually did go can be judged by the fact that with production increasing 80%, galvanized tonnage today is only 50% of normal. Out of a total average peacetime capacity of 150,000 tons monthly, only 75,000 tons are being rolled now.

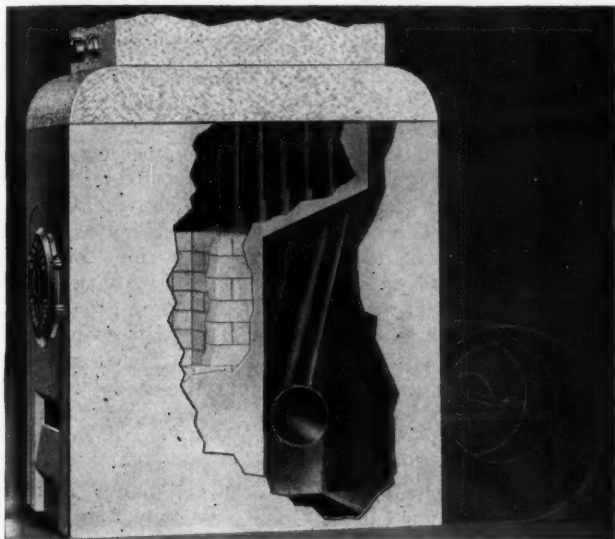
"What is happening to this 75,000 tons being produced every month is the next question that I am sure is in your minds. Who is getting this material? The answer is that it is being divided equitably among those whose need is greatest. 40,000 tons monthly is being routed to government agencies and manufacturers buying from the mill on a carload basis. Warehouses are receiving 35,000 tons monthly, with individual warehouses allocations based on tonnage handled during the base year 1940. Currently, War Production Board spokesmen estimate that despite the control of uses the production of galvanized is running about 5,000 tons a month behind demand.

"This increased production and increased allocation is helping warehouse stocks compared to their conditions last year. But are sheet metal shops getting any better breaks in receiving needed materials than before? You know the answer from your own experience. By and large, it is—no. For this there is a reason, of course, just as there is a reason for everything. The sheet metal shop is not getting steel because there are more carload buyers among manufacturers than there is mill tonnage to go around. What's happening is that the carload buyers who are unable to get on mill schedules for quick delivery, shift their orders from mills to warehouses. They pay the warehouse price but they also get the steel—not all of them, but many of them. These big buyers get the sheets you need, because under the Controlled Material Plan warehouses are required to sell their stock at any one time, to any buyer who can furnish a CMP allotment number. When the large tonnage buyer comes to a warehouse to purchase quantities which he has been unable to get on mill schedules, the small stocks, which have been accumulated on warehouse floors are quickly depleted. Warehouse stocks, over all, are improved, but it doesn't take many of these large orders to reduce stock piles to the point where, when the large number of regular warehouse customers—the sheet metal shops—seek material, they find that the cupboard is already bare.

"Will this situation change to your benefit? Yes, I believe it will, but only slowly over a comparatively long period of time. It will take many months before the flow of galvanized broadens out sufficiently to give you substantial relief—for production is going to continue to be tight at least until the end of the third quarter of this year. This forecast is not based on crystal gazing—it is based wholly on mill schedules and production facilities available. Right now a substantial proportion of hot rolled sheet making capacity is engaged in the production of plates. According to a W.P.B. spokesman, 50% of hot rolled sheet capacity

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QUALIFIED DEALERS**



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But government requirements today have largely been filled. A limited supply of Bertossa Heating units are now available on priority to accredited dealers.

Leading engineers and architects have long appreciated the efficiency of Bertossa heating units. Built in a wide range of sizes from 150,000 to 2,800,000 B.T.U.'s, Bertossa units have an unusually compact arrangement of blower and heating unit. They have a unique type of down draft flue. They have 90% direct heating surface, and they can be easily adapted to complete air conditioning.

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*with
Bendable Fins*



No. 92 Two-piece, with removable grille

★ The simple artistic lines of this register express streamline design at its best and harmonize with the furnishings of the modern home. Fins are regularly set to deflect air flow slightly upward; but being easily bendable, they can be adjusted to direct air flow straight outward or downward, as required. Scientific design affords large open area with minimum air resistance.



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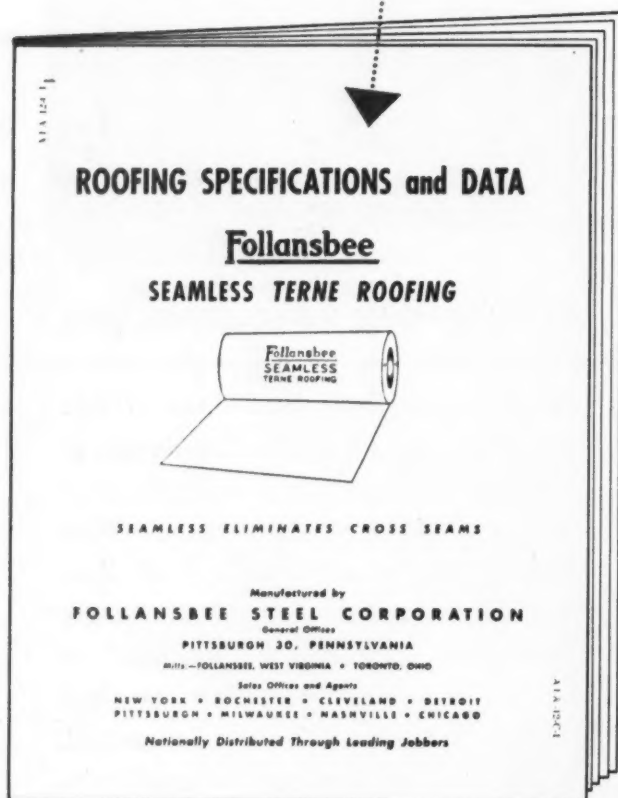
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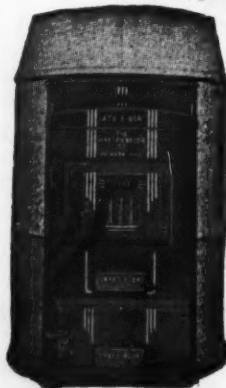
ELECTRICAL SHEETS & STRIP • ALLOY BLOOMS, BILLETS, BARS, SHEETS & STRIP • COLD ROLLED SHEETS & STRIP • POLISHED BLUE SHEETS
SEAMLESS TERNE ROLL ROOFING

is now engaged on this plate making job. By the end of the third quarter, new mills with plate making facilities will come into production—but even so, this easing of the sheet mill position will not improve production of hot rolled sheets lighter than 18 gauge, because these sheets are not made in mills participating in the plate program. The problem in the production of galvanized sheets is partially attributable to the lack of hot rolled sheets from hand mills, and partially to the lack of labor for operating galvanizing pots. This situation is likely to improve slowly. But even so with conditions as they are now, the chances are that any increased production that can be attained is going to *help the other fellow* more than you gentlemen here, engaged in the sheet metal business.

"As a specific illustration I can refer to the farm equipment manufacturers as a whole. These people through their industry associations, have a course of action all charted, all blueprinted, and they are going forward with it right now. They have been given releases on substantial tonnages of galvanized sheets, and they probably will receive an increasingly larger share as more galvanized becomes available, because they have been able to demonstrate convincingly the essentiality of their industry over other industries.

"The moral of this illustration is that the farm equipment people are organized, that they have a good strong industry story to tell in Washington which they have been able to tell because of the cooperation of the people within their industry. They have sold their story on its merits, in just the same way any cause has to be sold today.

"Is there no real factual story for the sheet metal industry to tell that is vital to the well being and health of the nation? There certainly should be, when in a conversation with a W.P.B. official in Washington



The furnace choice of dealers who know performance and saleability has been Ath-A-Nor for more than 50 years. Quality, economy and efficiency have always distinguished the Ath-A-Nor line. Replace with Ath-A-Nor to insure maximum performance and fuel economy! And continue to pile up scrap for munitions and see that it reaches government agencies speedily!

MAY-FIEBEGER COMPANY
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OVER 50 YEARS
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FOUNDRY
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Even Better than a Foundry in Your Own Backyard!

DON'T worry about the fact that firepot castings are getting scarcer and scarcer. When you use Fireline for repairing cracked and burned-out firepots, it's even better than having all the castings you want—when you want them.

A Fireline lining seals all cracks and holes in the firepot castings—prevents the escape of gas, odors, and dirt into the building. Good firepots, too, should be lined with Fireline as protection against burning out and because a Firelined furnace gives more heat from less fuel.

A Fireline job is attractive to the owner—it saves him money. It's attractive to the furnace man because it shows him a higher percentage of profit than new firepots or complete installations. Fireline is installed quickly—no dismantling; no waiting for parts; nothing special for any make or size. You can do more jobs with the same manpower. It's easy to see how the profits pile up.

Fireline has always been a standby for furnace men. Now it's a life-saver. Write for bulletins and prices with name of nearest jobber.

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- saves fuel for owner
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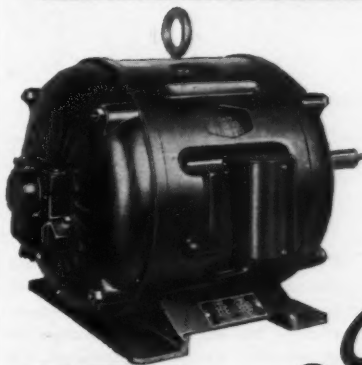


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Wagner Type RP Squirrel-Cage motors are made in several electrical types, varied as to torque and current characteristics to take care of a wide variety of applications: 2- and 3-phase; 1/6- to 400-hp.

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Wagner engineers are making a straight-from-the-shoulder offer to help you—to make your problem their problem—to assist you in every way possible to turn out exactly what should be the motor drive on your apparatus.

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If the equipment you are manufacturing is essential to war production plants, housing projects, or to the armed forces, Wagner will gladly figure with you on your requirements. Consult the nearest of Wagner's 29 branch offices, located in principal cities and manned by trained field engineers.

Write FOR BULLETINS

Bulletins MU-183 and MU-182 describe and illustrate the complete line of Wagner motors. Bulletins MU-7B and MU-30B give complete service instructions.



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TRANSFORMERS
UNIT SUBSTATIONS
INDUSTRIAL BRAKES
BRAKE LINING**

M44-128

BACK THE ATTACK—BUY U.S. WAR BONDS

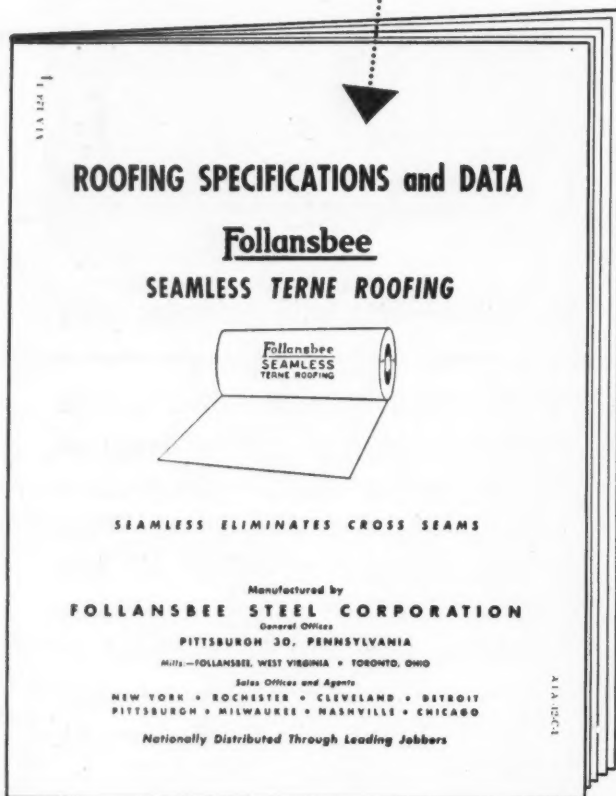
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A Fireline job is attractive to the owner—it saves him money. It's attractive to the furnace man because it shows him a higher percentage of profit than new firepots or complete installations. Fireline is installed quickly—no dismantling; no waiting for parts; nothing special for any make or size. You can do more jobs with the same manpower. It's easy to see how the profits pile up.

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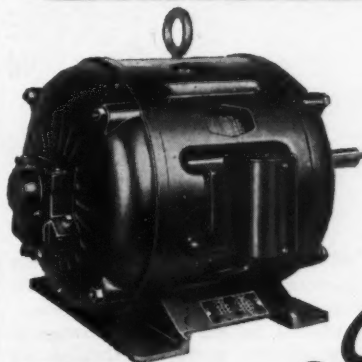


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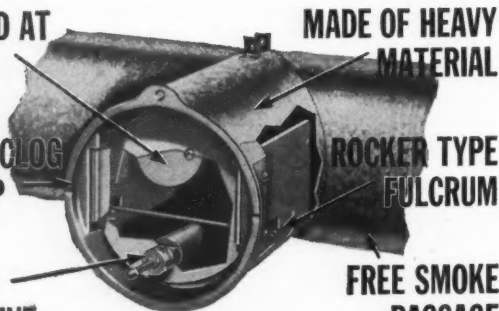
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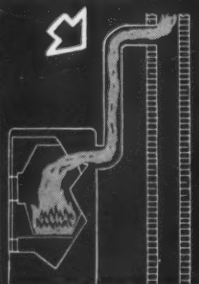
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FULCRUM**

**QUICKLY
RESPONSIVE**

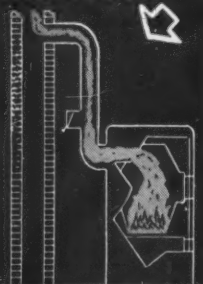
**FREE SMOKE
PASSAGE**



**HERE'S YOUR
PROBLEM . . .**



**HERE'S YOUR
ANSWER . . .**



★ The delicately balanced, but strongly built Field Barometric Draft Control compensates immediately for the slightest change in barometric pressure. Through all types of weather, it maintains the minimum draft necessary for proper combustion.

★ A Field Control provides fuel savings ranging up to 25%. There is a model adapted to any type or size of heating installation . . . coal or oil. The domestic controls can be installed in as little as thirty minutes; installation requires only a tin snips, a carpenter's spirit level, a little "know-how."

★ Write today for full, free facts. The profit margin on a Field installation is definitely worth while. They require no servicing. The market in your community is almost unlimited, as nine out of ten installations need a money-saving, fuel-saving Field Barometric Draft Control.



**FIELD CONTROL
DIVISION**

**H. D. Conkey & Co.
Mendota, Illinois**

he told me that in his opinion the accumulated demand for repairs on roofing, siding, and drainage equipment alone would absorb two years of galvanized tonnage with mill operations at capacity.

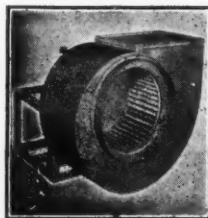
"Talking about organization isn't going to do much good—for no idea is worth anything until somebody is touched by it and uses it. You must have organization and you must use that organization to help band yourselves together in a movement—a crusade—toward a better more articulate sheet metal industry. You must become evangelists of modernization and sanitation in homes, advocates of better working conditions in industry. This is your story and you must learn to sell it—just as other industries have learned to sell their objectives to the public."

New National Ass'n

John C. Clark, president, Sheet Metal Contractors National Association, Inc., described what has transpired to date in the formation of the new national association. He described briefly some of the numerous meetings which have been held in the last twelve months. It was the hope of the organization, explained Mr. Clark, that if membership dues were set at \$5 per year, several thousand of contractors would be interested enough to join. This has not turned out as expected and therefore if the association is to obtain enough money to hire a secretary, open an office, and represent the industry at Washington and elsewhere, it will be necessary to increase the dues or to make a determined drive to get several thousand members. The association already has presented appeals and applications to Washington on the problem of obtaining furnace blowers as a fuel conservation measure, has presented briefly some of our problems over

YOUR BLOWER Requirements

AVAILABLE AT
Schwitzer-Cummins Company



★ **BLOWERS
FOR EVERY PURPOSE**

Double Inlet and Single Inlet

HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".

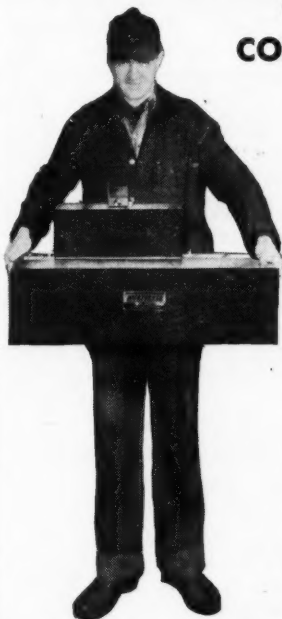


★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

**BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.**

Your ACE-IN-THE-HOLE

for the tough
COMPETITIVE DAYS
AHEAD!



Make no mistake about it. Today is the time to plan for the post-war era. Competition could be mighty tough then. Will you be prepared to meet it?

Lockformer will help you—not only now in war work—but in the uncertain days to come—with a line of sheet metal working machinery that saves time and cuts costs to an amazing degree.

Write for literature.



One man and a Lockformer can make more Pittsburgh locks than SIXTEEN men working at 8 hand brakes.

The LOCKFORMER Co.

4615 Arthington Street

Chicago 44, Illinois

You can UP production

...even
with
unskilled
labor



MODEL 1236
36-in. Throat
12-Gauge Capacity

CIRCLE CUTTING
ATTACHMENT
included as
Standard Equip-
ment with this
machine.

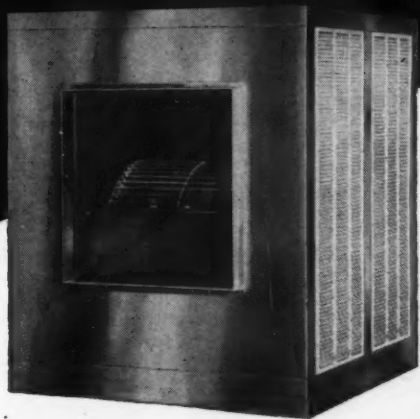
Libert ^{Hi-Speed} SHEAR

From almost any material—steel, stainless steel, brass, aluminum, metal screen, fiber, paper products—even an unskilled worker soon learns to cut intricate combinations of circles, angles, and curves, *rapidly, accurately, cleanly*. A Libert Shear does *not* nibble. Edges are smooth, need no finishing. Inside cuts are no harder than outside, whether it's flat sheets or formed work. No starting holes are necessary. Write for Bulletin.

Made in sizes up to 60-in. throat, 10-gauge capacity

LIBERT MACHINE COMPANY
Green Bay, Wisconsin

UTILITY Evaporative COOLERS



Utility Evaporative Coolers are now available on AA5 or better priority without authorization from WPB, with certain exceptions.

Coolers may be stocked for inventory or re-sale by obtaining approval from War Production Board on Form WPB-547 (PD-1X).

For exceptions and complete information, consult your local WPB office and ask for Order L-38 as amended December 6, 1943.



UTILITY FAN CORPORATION

Peace-Time Manufacturer of Famous Utility Air Coolers, Blowers, Fans, Floor Furnaces, Circulating Heaters, Unit Heaters, and Forced Air Furnaces.
4851 S. Alameda, Los Angeles 11, Calif.

SHEET METAL MEN should know more about this machine



KALAMAZOO
Metal Cutting Band Saw

**SAVES
EVERY
DAY
in your
SHOP**

Why let high priced labor cut by hand—lengths of angle iron—rods—tubes—bars, etc.—when this low priced machine does these jobs with amazing Speed and Accuracy? Pays for itself in Labor Saving and Steps up Production. Scores of shops say “just what we’ve always wanted.”

Write for bulletin.

MACHINE TOOL DIVISION

Kalamazoo Tank & Silo Co.

Kalamazoo, Michigan

WHITNEY LEVER PUNCHES

No. 4B PUNCH



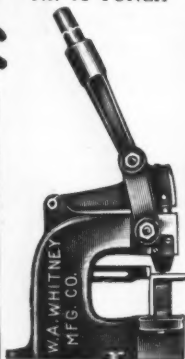
Length 8½ inches. Capacity ¼-inch hole through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

No. 6 PUNCH



Length—26½ inches. Capacity — ¼-inch hole through 3/16-inch iron; especially adapted for button punching or temp-lat work. Punches and dies ¼" to 9/32" by 32nds.

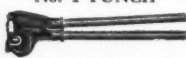
No. 91 PUNCH



CAPACITY
½-inch hole through ¼-inch iron; ¾-inch hole through 3/16-inch iron; 2-inch hole through ¾-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

We have tools for every purpose needed by Sheet Metal Contractors. Ask your Jobber

No. 1 PUNCH



Length—34 inches. Capacity — ¾-inch hole through ¼-inch iron. Punches and dies in sizes from ¼ to 9/16 by 64ths.

No. 2 PUNCH



Length—23 inches. Capacity — 5/16-inch hole through ¼-inch iron. Punches and dies in sizes 3/32" to ½-inch by 64ths.

CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two Punches interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.

W.A. W HITNEY MFG. CO.
636 RACE ST. ROCKFORD ILL

deferment of essential mechanics, and has had a hand in clarifying the situation on excess materials and copper.

Mr. Clark urged every member of the Illinois association to become a member of the national association and asked that every national member make himself a committee of one to ask for memberships among the trade in his area. Said Mr. Clark, we should realize that in the postwar era, competition will be even keener and we will be faced with many problems such as who will do certain types of work, and only as the industry is organized into a national voice can we make ourselves heard and get results.

A fish-and-chips buffet supper was served by the association with card playing and impromptu entertainment. On the final night a banquet was served to members, guests and ladies.

A Type And Size For Every Need

**DIAL
REGULATOR**



**JIFFY
REGULATOR**

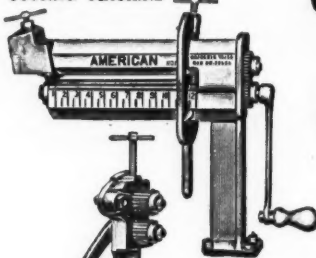
**UNXLD
QUADRANT**

For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.

PARKER-KALON damper controls

Machines for Cutting

No. 20
CUTTING MACHINE



**Crimping
and
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STOVE PIPE
FURNACE PIPE
FLAT SHEET METAL

**Make a Date
with Profit!**

**Use a
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FOR EASIER, FASTER WORK

REAL EFFICIENCY

QUALITY PRODUCTS LOW PRICES

You Get the Best

Send for Complete Catalog

No. 21
CRIMPING MACHINE



No. 22
BEADING MACHINE



Manufactured By

CHARLES E. KRAUS MFG. CO.

929 W. MAIN ST.

LOUISVILLE, KY.

Build Complete CHIMNEYS

with the famous

VITROLINER
-the Superior Flue

Trade Mark Registered

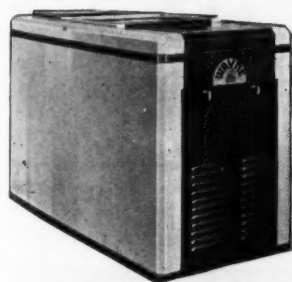
Listed by Underwriters Laboratories for all fuels, coal, oil, or gas. Over 27,000 Vitroliner flues are now in operation in Defense Houses thruout America, replacing masonry chimneys. Post War Vitroliner flues will be available for factory and home. Vitroliner can be placed thru roof where you want it,—requires no foundation, doubles the draft of a masonry chimney of the same height and cross section area. Can be suspended from ceiling or built into partition walls. Vitroliner Flues have long life and are dependable and safe. Built of finest materials obtainable yet low in cost.



It will pay you to know more about Vitroliner. Write for details and Folder.

Condensation Engineering Corporation
122 SO. MICHIGAN AVE., PEOPLES GAS BUILDING, CHICAGO, ILL.

WAYNE OIL-FIRED



FURNACE UNITS

60,000 to
400,000 B.T.U.

PROMPT SHIPMENT on proper priority

The complete line of Wayne oil-burning furnaces and burners is again available.

WAYNE OIL BURNER CO., 915 Glasgow Avenue
Fort Wayne 4, Indiana

WAYNE'S V-DAY LINE WILL BE COMPLETE

OIL-FIRED, GAS-FIRED, COAL-FIRED FURNACES, STOKERS, BOILERS, WATER HEATERS. CONVERSION BURNERS FOR OIL AND GAS.

LINE UP WITH WAYNE FOR POST WAR PROFITS

The *Customer Satisfaction*

you create with

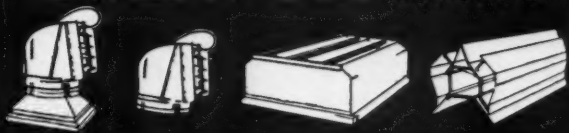
SWARTWOUT Roof Ventilators



... puts you in a position to enjoy continuing profitable business.

Write for Bulletin 214 showing the Swartwout Ventilator Line. THE SWARTWOUT COMPANY, 18511 Euclid Avenue ... Cleveland 12, Ohio

Swartwout VENTILATION SPECIALISTS

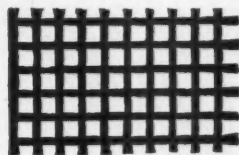
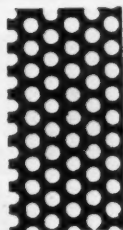


PERFORATED METALS

ARE ESSENTIAL

In Times of War and Peace

They are used in the manufacture of explosives and ammunition, flame arresters, airplanes, battle-ships and in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



The Harrington & King PERFORATING CO.

5848 Fillmore St., Chicago 44, Ill. and 114 Liberty St., New York, N. Y.



RANDALL PILLOW BLOCKS

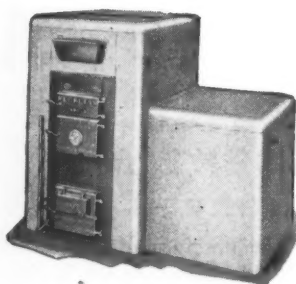
The complete absence of tell-tale metallic bearing noise in the Randall one-piece steel-housing pillow block can easily be determined by simple test.

The results will quickly tell you why Randalls are used more than any other on air handling equipment. When you install Randall-equipped units, you know quality is there because Randall is quality.

Write for catalog No. 42.

RANDALL

GRAPHITE PRODUCTS CORPORATION
DEPT. 110 607 WEST LAKE ST. CHICAGO, ILL.



PEERLESS WARM AIR FURNACES

Peerless Furnaces, including the Commander Heavy Duty Model for extra large buildings, are available under W. P. B. regulations. Fittings and registers are also available.

Repair Parts for All Makes of Warm Air Furnaces.

PEERLESS FOUNDRY CO., INDIANAPOLIS, IND.
Pioneers in Warm Air Heating for Nearly Half of a Century

Kruckman— Small Business

(Continued from page 45)

est of the members of Congress and other Government officials in smaller business is assumed to have a political base. The new Division in the Department of Commerce, headed by Quincy Adams, may stem from a similar beginning. Secretary Jesse Jones, another Texan, has cautiously flirted with smaller business for many months. Quincy Adams, incidentally, quite candidly tells you he does not yet know very much about the problems of smaller business, but he is assembling the data and talking to those who should know. This again is a familiar echo. For the past ten years those involved in the Government aspect of smaller business generally have spent their time gathering data. There must be a vast quantity of this data scattered around the Government somewhere.

In politics it is axiomatic that an issue is good only so long as the issue is not settled. Some of us here look upon the present performance with the smaller business problems somewhat as we might look upon a juggler who keeps a lot of iridescent balls in the air. Only in this instance there are a number of jugglers who are performing for your benefit, one trying to give a more catchy performance than the other. Obviously the most catchy performance is designed to catch your votes. The smaller business firms, and the rest of those who are embraced by the smaller business category, patently have the following in numbers (probably 60% to 65% of the voters), who might cast the deciding ballots in the impending elections. Farm-

REMEMBER — TO BUY
GENUINE
REPAIR PARTS for
ROUND OAK — Furnaces
Stoves and Ranges

ROUND OAK COMPANY
Dowagiac Michigan

COMING
ATTRACTION

EXTRA FEATURES
BETTER
THAN EVER
WATCH FOR IT

Majestic FURNACES
For Better Heating
A BIG HIT year after year

Booked Exclusively by established dealers
40 Years of Successful Performances

The Majestic Company, 919 Erie St., Huntington, Ind.

ers also are smaller business men, but no one has taken the trouble to awaken them to their relationship to the picture.

If the farmers and the smaller business men, particularly the white collar workers, were working in team, the combined group would more, by far, offset the solid labor vote. The politicians have a keen perception of the potentialities in the political consciousness of smaller business, and obviously the politicians are far ahead of smaller business itself in their recognition of the power of small business—if it were organized. The politicians, undoubtedly, foresee that it is inevitable some day smaller business will be organized, and will team up with the other smaller business men on the farms. Meanwhile the politician capitalizes the asset without spending more than is necessary to justify its favor. Generalities mostly are now the coins with which the politicians pay. Labor is highly organized and demands more than generalities. This is the reason why Patman probably did not fight the Maverick appointment. The opinion here is that whenever the smaller business interest collides with the labor interest, the labor interest wins. Particularly if it is the CIO interest.

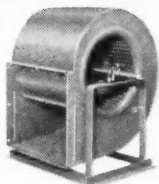
Many Willing Helpers

There are undoubtedly some sound and earnest organizations which function in behalf of the smaller business man. Washington is not yet very much aware of them. The general impression is that most of them are either sponsored by professional promoters or have a decidedly deep pink tinge.

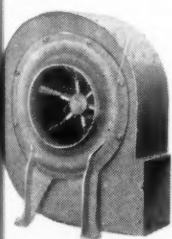
There are those who hint that Paul Hoffman's CED is the stepchild of the National Manufacturers Association. The latest report of its Small Business Committee does not appear to reflect any outside influence.

"Use CLARAGE PRODUCTS and Repeat Business Comes Easy!"

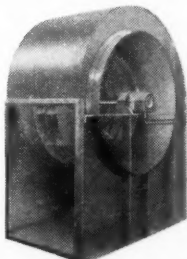
This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you KEEP desirable customers. It will pay to figure with us on any air handling or conditioning project. Write for Clarage catalog.



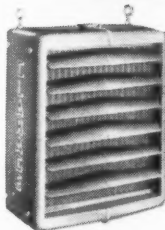
FURNACE FANS



EXHAUST FANS



VENTILATING FANS



UNIT HEATERS

COMPLETE
AIR CONDITIONING
• COOLING
• VENTILATION
• FACTORY HEATING
• MECHANICAL DRAFT
FANS and BLOWERS
for INDUSTRIAL NEEDS



Clarage Fan Company Kalamazoo, Mich.
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

MASTER TEMPERATURE CONTROLS



WHITE MANUFACTURING CO.

2368 UNIVERSITY AVE.

ST. PAUL, MINN.



PENN-AIRE FURNACES

GRAVITY, CAST IRON

Popular Price
Practical Design
Economical Operation

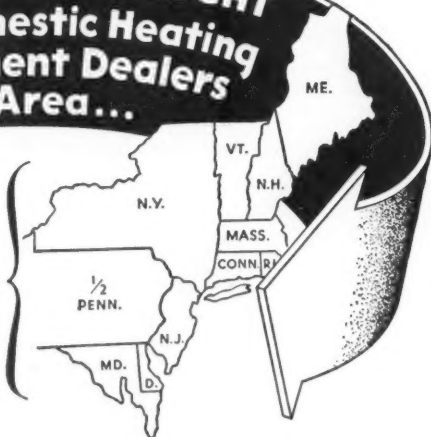
UNION MANUFACTURING CO., INC.

BOYERTOWN, PA.

FUEL FOR THOUGHT for Domestic Heating Equipment Dealers In This Area...

THIS IS THE
HARD COAL
(ANTHRACITE)
MARKET AREA

A clean, accept-
able fuel in our
own "back yard."



There are more than two and a half million home owners in this area now burning hard coal. They know hard coal, and trust it. They prefer automatic heat.

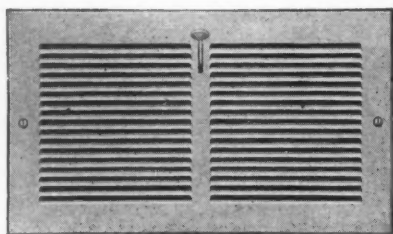
They will be ready buyers of Automatic Anthracite Stokers in the post-war days ahead. WILL YOU BE READY TO GET YOUR SHARE OF THIS MARKET?

GET ON OUR MAILING LIST NOW!

We have specialized in building domestic anthracite stokers for more than 15 years. We will offer a most complete line of postwar coal burning equipment.



CATSKILL METAL WORKS, INC.
CATSKILL, NEW YORK
ONE OF THE LARGEST PRODUCERS OF ANTHRACITE STOKERS



No. 7032—AIRO-FLEX REGISTER

ADJUSTABLE AIR DIRECTIONAL REGISTERS

A good furnace deserves a good register. Numerous warm air and air conditioning jobs today require, for efficient operation, a register permitting a downward directional flow of about 22°. The Airo-Flex "7000" series provides a high-grade but economical register for this purpose. Fins may be satisfactorily adjusted at time of installation for any desired angle. This is a single louvre register.

Other styles of Auer air conditioning registers, and also gravity registers, and intakes for all systems are described in complete Auer Register Book. Ask for your copy.

THE AUER REGISTER CO., Cleveland, O.

AUER REGISTERS
& GRILLES For Air Conditioning and Gravity

It urges vigorously that small and independent business should be fostered and maintained. It urges every obstacle be removed which would impede small and independent business. It suggests that those things which place differential handicaps on small business be removed. Government, Federal, State and otherwise, is asked to make available the way by which small business may have access to modern business techniques. After the war it suggests small business should be treated as fairly in allocation of materials and production quotas as all other categories, and that small business should not be required to wait for conversion on the time schedules of the large companies. New finance plans for small business are proposed, also revision of tax laws, particularly wartime excess profits tax which hurts small businesses more than others.

Recently a plan was submitted to the Congressional Committees for an over-all cooperation by Government agencies with small business. It was devised by A. L. Kalish, a chief of one of the Sections of one of the foremost permanent Government agencies. Kalish has had considerable business experience, nationally and internationally, and has had fine special training. He has skill, sympathy, keenness of mind, and is competent to understand the problems. It is significant that it has been deemed wise not to mention the agency to which he belongs. His plan is generally considered here as the most realistic proposed. Here it is:

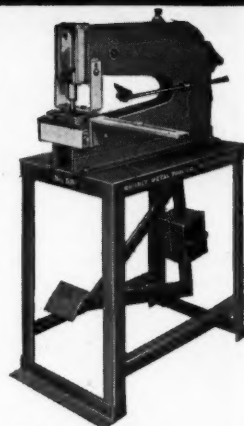
"Set up by Executive or Congressional action a central bureau with power to administer programs through various governmental agencies dealing with small business. This bureau must have power to enforce its programs and have a voice in all administrative matters affecting industry, both large and small.

"Select head of small business bureau with care.

WHITNEY-JENSEN PRODUCTS 30 YEARS EXPERIENCE

TOGGLE ACTION FOOT PRESSES

These machines have a powerful linkage that MULTIPLIES foot pressure to provide fast, EASY action on punching and forming operations and light production work. They are available in four sizes—7", 10", 18", or 24" throat depth. Capacity is 2" hole in 16 ga. iron and an operator can do 100 holes per minute or better.



Write for new Punch & Die Catalog.



NO. 10 BALL BEARING PUNCH

Powerful screw press action, with ball bearings in the screw race, gives this tool great punching power with light weight. Capacity 3/8" hole in 1/4" iron, weight only 8 1/2 lbs. Will also drive rivets.

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

Must be a business man with open, unselfish mind, preferably with some experience in government.

"Personnel of central bureau should be business men with knowledge of both small and large business operation, with ability to analyze business problems and effectively channel appellants to the proper source for relief, and if necessary to handle cases themselves.

"Each government agency dealing with small business as well as large should set up a branch or bureau with authority and responsibility to render assistance to small business.

"Each agency branch for small business should have representation and voice on all industry advisory committees in the interest of equity between small and large business. All directives, allocation, limitation and distribution orders, price orders and all orders affecting the manufacture or distribution of commodities and services, should be routed through this

WISS "METAL MASTER"



Compound Action AVIATION SNIPS

Used extensively by leading aviation and metal working industries and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
- All Parts interchangeable.
- M1 for cutting left—M2 for cutting right.

WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line
J. WISS & SONS CO.

ESTABLISHED 1848

NEWARK, N. J.

UNCLE SAM PICKS YOUR PROSPECTS FOR

Today's Stoker Sales

There's a big opportunity for Gehl Stoker dealers RIGHT NOW. Your Government encourages stoker installations in office buildings, hospitals, schools, churches, hotels. Most users of 25 or more tons of coal per season, are eligible to buy. They can save money, coal, time, and help the war effort by installing . . .



GEHL STOKERS

Dealers who line up now will be ready for the big postwar demand in domestic, commercial and industrial stokers. Write today for literature and dealer plan.

The performance records of Gehl Stokers over a period of years is outstanding. Gehl engineering backed by 76 years' experience has pioneered many noteworthy features, such as rust-resisting, all-cast chassis; Air Governor, fuel-saving automatic control of chimney draft, and other advantages that make sales and satisfied users.

GEHL BROS. MFG. CO.

Established 1867. Dept. BE-802, West Bend, Wisconsin

A GEHL WINS FRIENDS WHEREVER IT GOES



WILL

WILLIE

WILLIAM

BILL

4 Little "Fitting" Guys Fighting For You!

Will cuts installation costs—Willie makes fittings fit—William keeps prices down to bed rock—and Bill sees that there is stock near you.

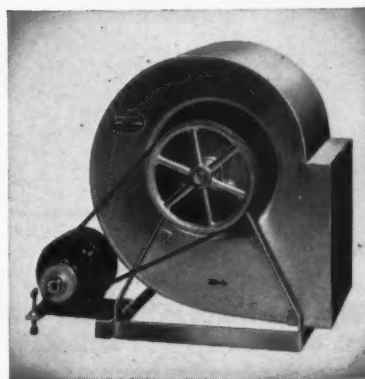
FLASH NEWS! Complete, simplified line Gravity Pipe and Fittings now available on rated orders—24 hour service and shipments.

FREE: Complete, easily understood gravity pipe and fittings catalog showing full simplified line. Write Dept. 2 for prices and catalog.

THE WILLIAMSON HEATER COMPANY
CINCINNATI 2, OHIO

WILLIAMSON WARM AIR FURNACES

COMPACT



ECONOMICAL

EFFICIENT

EASY TO INSTALL

"BRUNDAGE BLOWER FILTER CABINET UNITS AND ASSEMBLIES are the product of specialists in the warm air blower field. Prompt delivery on various types and sizes on proper priority."

ASK YOUR JOBBER
OR WRITE DIRECT TO

The BRUNDAGE CO.

—BLOWER SPECIALISTS—

KALAMAZOO - - MICHIGAN

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HOOKS^A & HANGERS



THRU
LEADING
JOBBER
EVERYWHERE




BERGER BROTHERS CO.

Main Office & Factory
229-237 Arch St., Philadelphia, Pa.

BARBER

Gas Pressure REGULATORS



Sizes 1/4" up
Certified by
A. G. A. Testing
Laboratory
Write for Prices

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, O.



New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Std. Arr. No. 1
for Belt Drive

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY
1817 South 66th Street Milwaukee, Wis.

For Balanced Atmosphere.

**THERMO-DRIP
HEAT-CONTROLLED
HUMIDIFIERS**



AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

branch for analysis and approval. If disapproved as not equitable to small business, the authority of the branch must be so constituted as to make its opinions heard and considered. This branch should cooperate with the Smaller War Plants Corporation to assist small business obtaining a share of government business.

"Each branch should have a division devoted to expediting matters representing problems of individual business men. This division should be staffed by business men who can readily recognize problems and act with a minimum of delay to expedite cooperation between government and business.

"The branch should hold meetings and consult with industry regularly, conduct economic surveys, maintain proper liaison, and act as claimant on government for small business including distribution of post-war surpluses."



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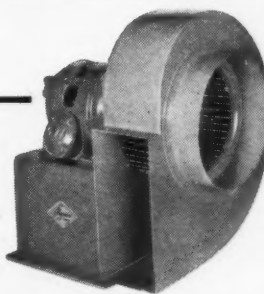
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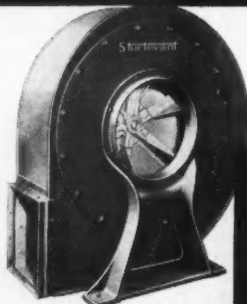
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DIAGRAM shows how special streamlined inlet deflects airstream so as to reduce turbulence and back plate erosion. Result: higher over-all efficiency, lower maintenance cost, less time out for service and repairs.



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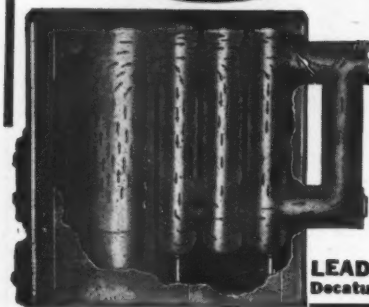
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WAR TIME

The National Security Award was presented to the Civilian Defense force of the Westinghouse Electric and Manufacturing Company's plant at Mansfield Ohio, recently. Training and organization of this force was directed by James F. Carrigan, plant protection chief.

Representing the Office of Civilian Defense Washington, D. C., Major Sternbergh also told the more than 800 workers who volunteered for air raid and other emergency duty, that the Mansfield plant was the third Westinghouse factory to win this honor.

Accepting the National Security Award on behalf of Westinghouse was Works Manager C. L. Van Derau who said that the Civilian Defense groups undoubtedly have been partly responsible for the fact that there has not been a single act of sabotage in the plant to slow down production of war equipment.

Another speaker was Ralph H. Stone, Columbus, Ohio, executive director of the State Council of Civilian Defense, who praised Mr. Carrigan's work and presented National Security Award pins to Mr. Van Derau and Stewart Roberts, president of U. E. Local 711, as representatives of the plant's Civilian Defense members. All members will receive pins.

Mr. Roberts called attention to the fact that the Westinghouse plant at Mansfield flies the Army-Navy "E" burgee, the Treasury 10 per cent flag, Plant Protection Guidon and now the National Security Award.

In recognition of continued outstanding production of glass fiber materials supplied for war uses, plants of Owens-Corning Fiberglas Corporation in Newark, Ohio, and Ashton, Rhode Island, have been granted a third renewal of the Army-Navy Production Award, entitling them to add a third star to their "E" flags.

Millions of square feet of Fiberglas insulating board, surfaced with Fiberglas cloth, have been supplied to the Navy to insulate hulls, tween deck spaces, crew quarters, refrigerated spaces, and other parts of fighting ships. Urgent need for continued high production of the insulating board for the landing craft program was stressed recently in a letter addressed to the men and women of the Fiberglas Corporation by Admiral E. L. Cochrane, chief of the Navy Bureau of Ships.

Thousands of yards of Fiberglas cloth have been supplied to the Army Air Forces for use as parachute flare shades for reconnaissance in night bombing. Other thousands of yards of glass cloth are being used to reinforce plastics in special aircraft applications. Still another large-volume use of Fiberglas textiles is as electrical insulation.

For more than two years Payne Furnace & Supply Company, Beverly Hills, California, has concentrated on war production.

Of the 125 Payne employees now in the armed services, the Company announces that their time, while on war leave, is being credited toward Service Club membership.

Write for
Catalog and
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**SPEED UP ORDERS
with a
BEVERLY
SHEAR**

Throatless shears that cut any shape . . . straight, circular or irregular. **FASTER—Precision—accuracy!** Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

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MFG. CO.**
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TRADE NEWS ☆

George W. Mason, president of Nash-Kelvinator Corporation, Detroit, reports that the company recently completed "on schedule" a Navy contract calling for "great quantities" of bomb fuses. Acting under strict military censorship, the company's Detroit plant first began assembly line production in March 1942 and became one of the country's largest manufacturers of bomb fuses, according to the Navy approved statement. Since then it has been producing three types of fuses for Navy bombs ranging from 100 pounders up to Atoll-Buster size.

The Navy bomb fuses, of the types made by Nash-Kelvinator, are delicate automatic instruments designed to detonate bombs after release over the target; moreover they are wired to protect aircraft crew from premature explosions while loading and flying bombs to enemy positions.


The fuses established an outstanding record for safety, being free from risk until they begin to fall. Then a tiny metal propeller starts whirling and after dropping about 500 feet it unscrews the mechanism so that a plunger falls into firing position. When the bomb hits the target, this plunger is forced back and the bomb explodes. To prevent the little fuse propellers from whirling inside the plane, it is locked with wire tied to a bomb clamp. Upon release of the bomb the wire slips from the propeller and it begins to whirl in descent. The larger size Navy bombs carry two of these propeller-type fuses to make doubly sure a bomb will explode—one in the nose and one in the tail. None of the propeller-fuse equipped bombs has ever been known to fall on the target a "dud."

Air Control Products, Inc., Coopersville, Michigan, has been awarded the Army-Navy "E" by the Air Corps. The award was received by president and general manager Robert L. Leigh. LeRoy Carr, president, Local 811-UAW-AFL, received the "E" Emblems on behalf of the employees. The presentation was made by Major R. H. Humphrey, District Public Relations Office of the U. S. Army Air Corps. Lt. Commander R. W. Drier, Inspector of Naval Materiel, read the citation and presented the "E" Award Emblems.

R. E. Smith, 1513 Monroe, Waukegan, Illinois, reports that he has supplied quite a number of shipbuilding companies with Smith's cleat benders. About 95 per cent of his orders have been directed toward war effort.

Lt. Raymond E. Smith Jr. (son) has recently obtained his wings and expects to be in combat soon.

Airtemp Division, Chrysler Corporation, Dayton, Ohio, has been awarded the White Star for its Army-Navy Production Award Flag. The White Star, which the renewal adds to the Army-Navy Production Award Flag, is the symbol of appreciation from the armed forces for continued and determined effort and patriotism.



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A thermostat of unusual construction and unfailing performance. Requires no artificial acceleration

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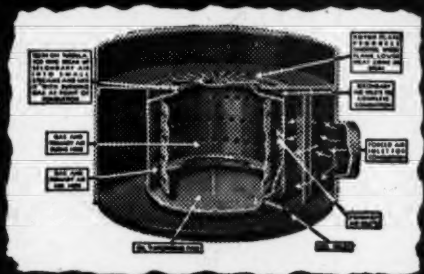
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Quick-Operating Automatic Shutter

A shutter that opens the instant the air current starts, and closes tight when the air current stops. No flapping or fluttering in between-times. Weather-stripped so that louvers fit snugly, keeping out wind, rain, snow and insect pests. Sizes 10" to 60" square—also rectangular.

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Rear View (Closed)

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Vernois Furnaces were famous for customer satisfaction and dealer profit before the war, they'll be greater than ever after the war!

Keep your Vernois installations at top operating efficiency... use only genuine Vernois parts in repair work. Order Vernois parts direct from the manufacturer.

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FOR SALE

FOR SALE—A first class shop in a two-story building 50'x125', including a fine plumbing and sheet metal stock, shop equipment and two Dodge service trucks. Selling because of ill health. Will also sell two-story house adjoining shop with one five-room (rented) and one seven-room apartment. This is an unusual opportunity to make a good buy of living and business quarters at a very economical price. Located in California. Address Key No. 580, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

FOR SALE

Sheet Metal Shop, Oldest in Miami, established 1910, doing general sheet metal, restaurant, hotel, and dairy equipment, ventilation, and air conditioning, defense plant, air and naval base maintenance, blow-piping and construction work. Shop fully equipped and operating. Owner retiring. Good business, good old time customers, good opportunity for one wishing to locate in Miami with good established business. Pioneer Sheet Metal and Roofing Works, 2819 N. Miami Ave., Miami, Fla.

Lot of Acer and Whedon pre-fabricated fittings, wall stack and duct material. Inventory and prices upon request. Massey, Wood & West, Richmond 20, Va.

Sheet Metal mechanic, design, layout; 35, married, veteran. Desires permanent connection in Florida. Address Key No. 583, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

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Stove Foundry complete with all equipment including Foundry Buildings, Office Building, pattern shop, machine shop, sheet metal shop, sand blast room, paint spray room, enameling oven, nickle plating & welding equipment, large warehouse, situated in Northern New England. Address: Key No. 584, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

Man of 20 years' experience Manufacturing, Selling Warm Air Heating, Air-Conditioning Equipment to Jobbers, Dealers, desires connection with Furnace Manufacturer. Will invest. For details, address: Key No. 582, American Artisan, 6 N. Michigan, Chicago 2, Ill.

COOLING! COOLER PLANS, PARTS AND SUPPLIES. Blowers, exhaust fans, pumps, floats. Electric Sump Pumps, gas stoves, \$35.00. Automatic gas water heater, \$37.50. Controls for oil, gas, stokers and damper motor sets, \$13.90. Furnaces for coal, oil and gas. Oil, gas burners and Class A stokers. Plumbing fixtures. Lowest Prices, Prompt Shipment. Biggs Supply Company, Lincoln 4, Nebraska.

REPAIR PARTS

For all
Furnaces - Boilers - Stoves
GUARANTEED TO FIT

Get after Spring repair business early while you can still get help.

Brauer carries everything to enable you to do a complete job with complete satisfaction.

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1/4" Standard Holgun \$32.50

Models to fit any metalworking job. Capacities from 1/4" to 1 1/4" in steel—double in hardwood. Drive twist drills, wood augers, hole saws, many attachments. Powerful Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 782 Pennsylvania Avenue, Towson-4, Maryland.

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Portable Electric TOOLS

DRILLS, HOLE SAWS, DRILL STANDS, ELECTRO-SHEARS,
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STRECKNO IS Profitable—



STRECKNO Packing Seals all the
Open Joints on all Sides and Bottom
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A Case of 12 Sets of STRECKNO cost the Dealer \$6.60.—Sells installed at \$2.00 per register.—A margin for the Dealer of \$17.40 per Case.—Installation time 5 to 10 minutes per Register, or \$17.40 for approx. 2 hours' work.—Just mention STRECKLESS registers to the home owner and you have a job installing.—Literature for a STRECKNOTIZING Campaign free to Live Active Dealers.—Better order one or a few cases from your Jobber today as a starter.

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Trademark YAGER'S Soldering Salts — Paste Reg.

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

1/2 lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.

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Wanted—Used 18 ga. 10-ft. foot or power shear, 10 to 15 KVA Spot Welder, Kick Press, 30" to 36" Circle Shear. 1/6, 1/4, 1/2 hp. A. C. 110 v. motors. Excel Heating & Air Cond. Co., 3717 Belmont Ave., Chicago 18, Ill.

Wanted to buy—Complete patterns and core boxes for 20", 22", 24", 26", 28" Cast Iron Furnaces, late type slip fronts. Please submit details and prices to Key No. 585, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

PLANT SUPERINTENDENT—to take complete charge of production in large factory located in the Middle West, engaged in the manufacture of heating and air conditioning equipment.

We are seeking the right man whose background and experience will fit him for this responsible position. To such a man, we can offer a good salary and excellent working conditions.

This man should have an understanding of, and be capable of handling labor problems. He should be able to direct the activities of a group of men.

We will give special preference to a man who has had experience in the operation of semi-steel and grey iron foundries, and in the fabrication of light sheet-metal. He should be familiar with tools and dies.

Our organization knows of this advertisement, so feel free to write fully, giving your education, past experience, present position, age, size of family, necessary information regarding fraternal affiliations, salary expected, etc. Please send a recent snapshot with your application. Give full particulars in your letter. If it interests us, we will arrange a meeting to suit our mutual convenience. Write Key No. 584, American Artisan, 6 N. Michigan Ave., Chicago 2, Illinois.

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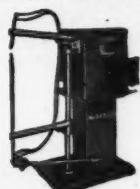


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Aviation and Air Conditioning SNIPS

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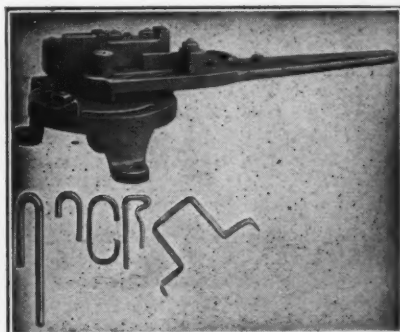


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A Real Precision Tool

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BOX & PAN: Length 7 Ft., 14 ga. cap.

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AMERICAN ARTISAN, May, 1944



WITHOUT MODUFLOW — Alternate periods of heat and no heat, causing drafts and air stratification . . . RESULT: Cold floors overheating and underheating . . .

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THE EVOLUTION OF HEATING RESULTS IN MODUFLOW CONTROL

THE MINNEAPOLIS-HONEYWELL MODUFLOW CONTROL SYSTEM is the logical step in the evolution of home heating systems.

Instead of alternate periods of heat and no heat, due to intermittent heating and causing drafts and air stratification, which results in cold floors, the Moduflow System of Control delivers a constant supply of heat, modulated to the exact degree necessary to offset loss of heat from the home. Moduflow accomplishes this by automatically mixing heat from the furnace or boiler with return air or water to exactly the temperature required, and continuously

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The Moduflow System of control will be available after the war for any automatic heating plant. Its cost for existing homes is surprisingly low. In new homes it is even less. It is easy to see why the Moduflow System will revolutionize postwar home heating . . . Write for full information to Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis 8, Minnesota. Branches and distributing offices in 49 principal cities.



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Here's the Profitable prescription and Sure Cure!

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Free TO AIR CONDITIONING MEN

A handy, new booklet listing various sizes of filters and the number of each required for warm air furnaces and air conditioning units.



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